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FIFTY-FIRST YEAR

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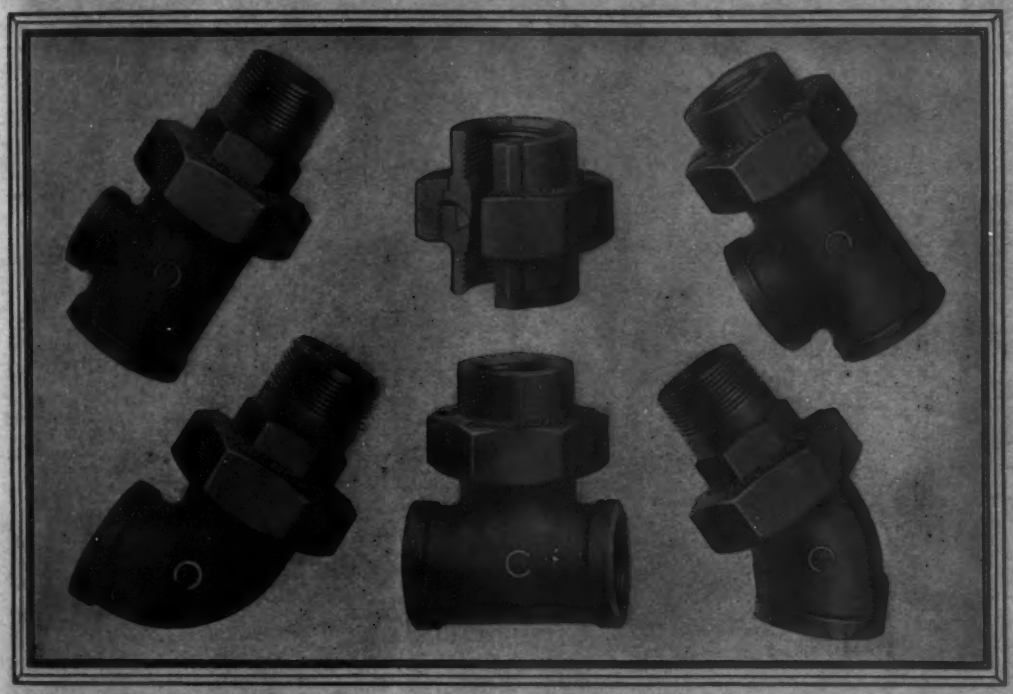

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ESTABLISHED IN 1872

PAPER TRADE JOURNAL

The International Weekly of the Paper and Pulp Industry and the Pioneer Publication in its field

FIFTY-FIRST YEAR

Published Every Thursday by the

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SUPERINTENDENTS MEET IN SPRINGFIELD, MASS.

Annual Convention of the American Pulp and Paper Mill Superintendents' Association Is Most Enthusiastic and Successful Gathering in the History of the Organization—Nelson R. Davis of the S. D. Warren Co., of Cumberland Mills, Inc., Elected President of the Association for the Ensuing Year—Interesting Papers Read By Representative Men

[FROM OUR REGULAR CORRESPONDENT.]

SPRINGFIELD, Mass., June 4, 1923.—In what proved to be one of the most enthusiastic and successful gatherings of papermakers ever held in this country, about 400 members of the American Pulp and Paper Mill Superintendents' Association attended their annual convention held at the Hotel Kimball, Springfield, Mass., May 31, June 1 and June 2. While not quite as large as the Kalamazoo Convention of last year, in every other way it was probably the best convention the organization has ever held. The program of papers and discussions was one of unusual excellence and the social features arranged were very pleasing.

Aside from the many interesting features which were scheduled, much interest is the action taken by the organization in forming a news print section. This was done at the instance of a letter from Philip T. Dodge, president of the International Paper Company, who so heartily approves of the superintendents' organization that he wishes his superintendents to belong to it. This will mean a very sizable increase in membership.

Delegates began to arrive in Springfield on the Wednesday evening and by the following morning when the scheduled events began to take place a large precentage of the members was present.

Morning Session Opened by John White

The morning session was opened by John J. White of the Whitmore Manufacturing Company, Holyoke, acting as temporary chairman, who briefly outlined convention plans and then presented the president, J. H. O'Connell of the Diana Paper Company, Harrisville, N. Y.

In the opening address, President O'Connell paid high tribute to the work of the committee having the convention in charge and to the companies in the locality of Springfield who had made the convention possible. President O'Connell reviewed the progress made since the last annual meeting, held in Kalamazoo, citing the installation of the three new district organizations, the Western district at Chicago, the Quebec district at Montreal and the Connecticut district at Springfield and of the increase in membership of 112 over that period.

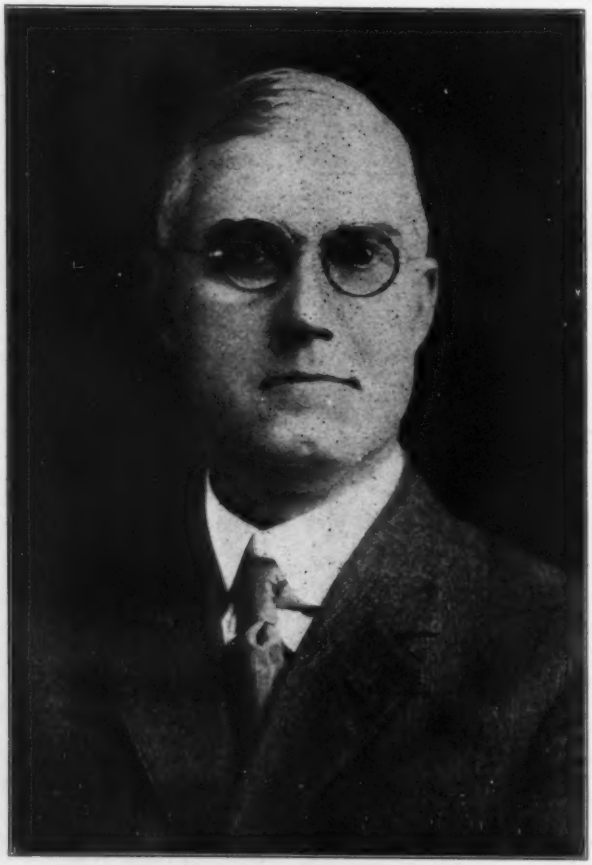
"One of the most hopeful and satisfactory features of the progress of the association in the past year has been the co-operation that we have had from the mill managers and presidents who have been watching us for the past five years and who are gradually coming to realize that what we have done, are doing and will do is of vital importance to the industry," said Mr. O'Connell.

"The conditions which prevail as a result of the good feeling that our organization has engendered has brought about a great contrast to conditions which existed a few years ago when the only way a superintendent could get into the mill of a rival superintendent was to put on a pair of overalls and crawl in through the back window.

"Now membership in this organization is an open sesame to all mills in this country and in Canada and our members take real pride in being of assistance to each other."

President O'Connell concluded his remarks with a charge to the members to take a sincere interest in all the events of the convention.

In a few well chosen words the Hon. Edwin F. Leonard, Mayor of the City of Springfield, welcomed the members of the association to the city, handing over the keys in the most approved fashion and maintaining that while Springfield was not naturally a wide-open city that he would throw it wide open. The Mayor prophised reaction of real value to the Connecticut Valley from the presence of the Convention and even went so far as to promise to bail out any recalcitrant member who broke the curfew law and was found on the streets after one a. m.



NELSON R. DAVIS, PRESIDENT

F. C. Boyce, Wausau Paper Mills Company, Brokaw, Wis., the first national president of the association, and Peter J. Massey, Wm. F. Hall Printing Company, Chicago, the present treasurer, were called upon by the president at this point and spoke briefly.

"Relationships in the Paper Industry," was the title of a splendid paper given by Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association.

Following Dr. Baker's talk, the members stood in silence as a tribute to three of the members who had passed to the Great Beyond during the past year, namely, Alexander T. McFarlane, formerly superintendent of the Fiber Division of the Hoberg Paper & Fibre Company, Green Bay, Wis., who died on Nov. 26, 1922; Floyd Alfred Tifft, formerly superintendent of the Deer-

field Valley Paper Company, Monroe Bridge, Mass., who died on Feb. 2, 1923, and W. C. Sheehan of Olean Falls, Ore., who died late in February.

The meeting adjourned shortly before one o'clock and a luncheon was held for the members and their guests in the Banquet room of the hotel.

The following committees were appointed by President O'Connel at the Morning Session.

FINANCIAL COMMITTEE: N. E. Division, Benjamin T. Larrabee, S. D. Warren Company, Cumberland Mills, Me.; Miami Division, H. W. Server, Miami Paper Company, West Carrollton, O.: Mich. Division, N. W. Brisbois, Southerland Paper Company, Kalamazoo, Mich.; N. Y. District, Homer Stafford, Knowlton Brothers, Watertown, N. Y.; Conn. District, J. J. White, Whitmore Manufacturing Company, Holyoke, Mass.

RESOLUTIONS COMMITTEE: L. E. Smith, Nekoosa-Edwards Paper Company, Nekoosa, Wis.; S. F. McHenry, Belgo-Canadian Pulp and Power Company, Shawanigan Falls, Que.; W. A. Anderson, Kinleith Paper Mills, Ltd., St. Catherines, Ont.; Claude Nicely, La Salle Paper Company, South Bend, Ind.

Thursday Afternoon Session

The members of the association were unanimous in characterizing the second session of the Convention, held in the Hotel Kimball, Thursday afternoon, June 31, as one of the most valuable meetings ever held by papermakers in this country. Four very splendid papers were read and each was followed by constructive discussion in which a large number of superintendents took part. Moot questions were freely debated and the result of many experiments were pooled to the general advantage of all.

The program included the following features: "Boothal Pulp and Water Saver," by L. M. Booth Chemical Company; "Suction Rolls," by Harold Bing of the Sandusky Foundry and Machine Company; "Foaming of Paper," by R. R. Best of the Western Paper Makers Chemical Company, read by Mr. Johnstone of the same firm; and "Lubrication," by T. E. Dial of the Vacuum Oil Company, read by R. P. Tobin, chief engineer of that concern. In each case the gentleman giving the paper led the discussion.

Thursday Evening Banquet

Over 400 members and guests sat down to a complimentary banquet given Thursday evening by the Paper Makers Chemical Company, Buchanan, Bolt & Company, Holyoke Bar Company, B. F. Perkins & Son, Inc., Casper Ranger Construction Company and Walsh's Steam Boiler Works.

John J. White of the Whitmore Manufacturing Company, acted as toastmaster and called upon Paul E. Bidwell of B. F. Perkins & Son, Inc., for the address of welcome which was responded to by J. H. O'Connell, president of the association. Rev. H. B. Hulbert, F.R.G.S., gave a very splendid talk on economic and political conditions in the Far East, painting a vivid picture of the opportunities which that section present for American commerce. His speech was replete with a wealth of illustration and anecdote gained through many years spent in Korea and China.

Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association spoke of the long felt need in the industry of a social center in New York City which has lately been very adequately taken care of by the formation of the Forest Industries Club.

No small part of the pleasure of the evening was contributed by the appearance of Patrick J. O'Sullivan, self-styled president of the New York Amalgamated Garment Workers' Union and his fellow entertainers whose songs and stories were the last word in snappy entertainment.

Friday Morning Session

Friday morning proved to be about the busiest time of the convention it being the occasion for the sectional meetings under the leadership of the various chairmen.

The Chemical Pulp Superintendents listened to three discussions. Theodore Safford of the Racquette River Paper Company, spoke of the variables of Wood Chips and the necessity of proper care of the chipper. "Sulphite Mill Control," was considered by Mr. O. L. Berger of the G. D. Jenssen Company and Edwin Sutermeister, chief chemist of the S. D. Warren Company told of losses that occur in making soda fiber.

Sidney D. Wells of the Forest Products Laboratory who was to have discussed the action of sulphur in cooking sulphate pulp from jack pine, was unable to be present.

Friday Afternoon Session

At the afternoon session, B. T. McBain of the Nekoosa-Edwards Paper Company, who is known throughout the industry because of the study he has made of waste problems gave a very excellent paper on this subject. A treatise on the coloring of paper was read by Kenneth T. King of the E. I. du Pont de Nemours Company. Herman R. Harrigan of the American Writing Paper Company talked on his theories of the care and operations of beaters and A. W. Nason of the Green Bay Foundry and Machine Company explained the uses and advantages of the screen save-all.

Annual Banquet

More than 500 superintendents, their wives, daughters, and friends, attended the annual banquet, held Friday evening, sang, "In the Good Old Summer Time," "Sweet Adeline," "Hail, Hail the Gang's All Here," and a score of other old favorites, listened to addresses by Col. B. A. Franklin, vice-president of the Strathmore Paper Company of Holyoke, and William F. Whiting, president of the Whiting Paper Company of Holyoke and thoroughly enjoyed themselves.

John J. White was toastmaster and introduced the speakers, John H. O'Connell, national president of the organization briefly welcomed the delegates and their guests.

William F. Whiting, head of the Whiting Paper Company of Holyoke, was the first speaker at the banquet, and after pointing out the cost of Government he stated that the pioneers who founded the United States did so to gain just what Americans are losing today —"freedom of thought and action." He closed with an appeal to the delegates to preserve for future generations what past generations worked to build up for the present day.

Col. B. A. Franklin explained the four principles which make for scientific management, and then he explained that while one of the greatest problems now facing industry is to make labor happy he believes that this can best be accomplished by friendliness and fair dealing.

The banquet was a great success from every point of view. The orchestra led in the main singing although there were individual choruses and quartettes that put up some opposition. It was a common thing to have five different songs under way in different parts of the banquet hall at the same time. Gradually as the orchestra took up some new selection the various groups would join and for a time the entire assemblage would concentrate on one song. It was just the kind of banquet the arrangement committee had planned and it was every bit as successful as they had hoped it would be.

Mrs. Janet Colson Webster, soprano, sang, accompanied by Mrs. Edythe Snell Gardner on the piano. Several accordion and violin duets by Capuchio and Ferrari met with instant response. Varied entertainment was furnished by the Garden City trio.

Election of Officers

The business session held Saturday morning did not get under way until a later hour and it was not until 1:30 in the afternoon that the election of officers was completed.

Nelson R. Davis, of the S. D. Warren Company, Cumberland Mills, Me., was elected president by unanimous vote as were all of the other officers for the ensuing year.

John H. O'Connell of the Diana Paper Company, Harrisville, N. Y., the retiring president refused to run for the office again.

Other officers elected include: first vice-president, E. T. A. Coughlin, Allied Paper Mills, Kalamazoo, Mich., second vice-president, Homer P. Stafford, Knowlton Brothers Company, Watertown, N. Y., third vice-president, B. T. McBain, Nekoosa-Edwards Company, Port Edwards, Wis., fourth vice president, William Anderson, Kinleith Paper Mills, St. Catherines, Ont., fifth vice-president, H. W. Server, Miami Paper Company, West Carollton, Ohio.

The first resolution offered by the Resolutions Committee, of which B. T. McBain was chairman, recommended that there be five vice-presidents elected. This measure being deemed advisable as difficulty has been experienced in the past, in getting national officials to attend the division meetings. This resolution was adopted.

Other resolutions adopted were concerned with the organizing of a news section, a vote of thanks to the committee on arrangements; greater subdivision of sectional meetings; the admission to membership of such men as divisional officers shall approve; the recommendation that all companies be asked to pay the dues of their representing superintendents; the holding of elections by all divisions at the same time of year; the appointment of a committee to work with a similar committee to be appointed by the Canadian Pulp and Paper Association, to lay plans for apprenticeship work; the appointment of a Committee of Five to work with committees from the Technical and Cost associations in affixing standards for the various divisions of the industry; a statement of opposition to any attempt of the Canadian Government to cut off from American mills the supply of wood and pulp and at the same time a reminder to them of the coal annually sent to Canada from this country as well as the market here for Canadian commodities; an expression of willingness to help the railroads in their management and traffic problems; a committee to revise and publish the by-laws of the association; and resolutions of sympathy to the families of three members who have passed away during the past year.

While the decision is one to be made by the executive committee, it is probable that next year's convention will be held at Watertown, N. Y., when President O'Connell asked for discussion on this point, the Northern New York City was the only one discussed. Homer P. Stafford, Knowlton Brothers Company, told of the assured co-operation of mill owners and supply people in his section. He offered for their consideration the fact that the 1,000 Islands which are very near Watertown would afford unusual opportunities for sightseeing. Prominent members of the association expressed themselves as favoring Watertown.

A report of the finance committee showed total receipts for the year as equaling $14,226.03, while disbursements were $1,952.09, leaving a balance on June 1, of $12,273.94.

The Ladies

The wives, daughters and sweethearts of the delegates, who came with them to the convention were by no means neglected. Thursday afternoon they were taken in a specially chartered electric car to Springfield's beautiful Riverside Park, where they were treated to a clambake, many of them remaining through the evening for the musical concert which followed.

About 100 of the ladies made a trip to Mount Tom on Friday. They had luncheon at the Summit House and returned to the Kimball for the evening banquet.

Motion Pictures

Three very interesting motion pictures were shown the papermakers during the three-day session. At the Thursday evening banquet two films were shown. One, through the courtesy of Price Brothers, Ltd., Quebec, Canada, which delineated the complete woods operations from the time the tree is cut down until it is delivered to the pulp mill.

The second film, shown through the courtesy of Mr. Russel McCandless of the Riordon Company, Ltd., of Canada, was really a continuation of the first, and showed the manufacturing process of bleached sulphite. In both of these films a very noticeable feature, was the great absence of human labor, so many of the operations being performed almost entirely by specially constructed machinery.

Friday afternoon at the close of the discussion session, representatives of the Tidewater Oil Company, exhibited several reels of very interesting scenes concerned with the production of their product.

Trips of Inspection

At all times during the convention, cars were in readiness to take the guests to any of the neighboring mills in Holyoke and Mittineague and a large number availed themselves of the opportunity. Parties were constantly inspecting the various plants in the vicinity and every courtesy was accorded them by the mill officials.

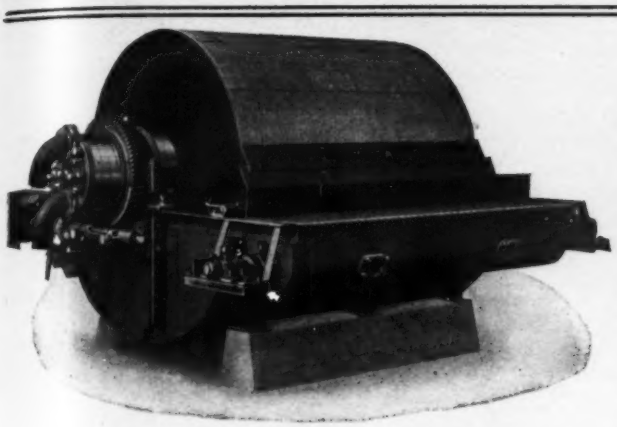
THOSE PRESENT AT THE CONVENTION

Among those who attended the convention were the following:

Ralph E. Abbott, Lewis E. Tracy Company, Boston; R. B. Adams, Stone & Woodward Company, Newton Upper Falls, Mass.; Isaac Allen, W. F. Robertson & Co., Ashuelot, N. H.; Woodward Allen, Solvay Process Company, Boston; A. J. Allison, A. A. Simards & Son, Dayton, Ohio; Robert E. Argy, Cliff Paper Company, Niagara Falls; William P. Argy, Montague Machine Company, Turners Falls, Mass.; M. J. Argy, Cliff Paper Company, Niagara Falls, N. Y.; Malcolm U. Arthur, Appleton Woolen Mills, Springfield, Mass.

G. A. Babb, Knox Woolen Company, Camden, Me.; E. C. Babbitt, Union Screen Plate Company; W. E. Byron Baker, York Haven Paper Company, York Haven, Pa.; James Barclay, Whitmore Manufacturing Company, Holyoke, Mass.; Hugh N. P. Baker, Secretary, American Paper and Pulp Association, New York City; Joseph Barie, Taylor Logan Company., Holyoke, Mass.; Andrew F. Barnett, Oakland Paper Company; F. L. Barstow, Falulah Paper Company, Fitchburg, Mass.; A. L. Beals, Curtis & Brow, Inc., Newark, Del.; F. K. Becker, Bird Machine Company, South Walpole, Mass.; Bernard Benson, Williams Gray Company, Chicago; W. M. Benzing, The Champion Fibre Company, Canton, N. C.; O. L. Berger, G. D. Jenssen Company, New York City; George L. Bidwell, Warren Manufacturing Company, Riegelsville, Pa.; P. W. Bidwell, B. F. Perkins & Son, Holyoke, Mass. Harold Bing, Sandusky Foundry and Machine Company, Sandusky, Ohio; B. M. Bishop, Gardner & Harvey Paper Company, Middletown, Ohio; P. S. Bolton, Foxboro Company, Inc., Foxboro, Mass.; L. M. Booth, Booth Chemical Company, Elizabeth, N. J.; J. A. Bowers, Hammermill Paper Company, Erie, Pa.; F. C. Boyce, Wausau Paper Mills Company, Brokaw, Wis.; A. E. Bridge, Shartle Bros. Machine Company, Middletown, Ohio; N. N. Brisbois, Sutherland Paper Company, Kalamazoo, Mich.; A. W. Bronk, Deerfield Valley Paper Company, Monroe Bridge, Mass.; M. V. Brooks, Miamisburg Paper Company, Miamisburg, Ohio; Ogden Brower, Jr., Gibbs-Brower Company, New York City; Wm. E. Brown, American Wringer Company, Woonsocket, R. I.; Alfred Bryant, Bryant Paper Company, Kalamazoo, Mich.; William Brydges, Defiance Paper Company, Niagara Falls, N. Y.; J. G. Bullard, Huron Milling Company, Holyoke, Mass.; W. T. Bunce, Providence Drysalter Company, Providence, R. I.; Ernest W. Bush, Chemical Paper Manufacturing Company, Holyoke, Mass.

Alexander Caldwell, Geo. E. Robertson Company, Hinsdale,



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5. How long is pulp in process of washing under your present methods?.....
6. What percentage of soda is lost in process? .....
7. How much hot water do you use per ton of pulp? .....
8. To what extent is your black liquor diluted before it is returned to the evaporators? .....
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William Dalrymple, Rainbow Paper Corporation, New York, Windsor, Conn.; A. Davis, Riordan Company, Temiskaming, Que.; W. T. Davis, Jr., Dells Paper and Pulp Company, Eau Claire, Wis.; V. S. Denison, Sandusky Foundry and Machine Company, Springfield; P. F. Denner, Kalamazoo Paper Company, Kalamazoo, Mich.; William F. Dewey, B. D. Rising Paper Company, Housatonic, Mass.; J. C. Dieffenderfer, Paper Makers Chemical Company, Easton, Pa.; F. N. Dillon, Jr., D. M. Dillon Steam Boiler Works, Fitchburg, Mass.; George Docherty, Holyoke Wire Cloth Company, Holyoke, Mass.; C. Dodd, Riordan Paper Company, Quebec; A. Scott Dowd, The Paper Industry, Chicago; E. F. Driscoll, The Smith Paper Company, Lee, Mass.; Thomas Duff, American Writing Paper Company, Holyoke, Mass.; Thomas L. Dunbar, Stebbins Engineering and Manufacturing Company, Watertown, N. Y.; John Durkin, Wilson Wire Works, Kearny, N. J.

Jacob Edge, Downington Manufacturing Company, Downington, Pa.; Charles L. Ellis, Downington Manufacturing Company, Downington, Pa.; Paul S. Ellison, Paper Trade Journal, New York City; T. L. Edmonds, Wausau Paper Mills Company, Brokane, Wis.

F. C. Farnsworth, Farnsworth Company, Norristown, Pa.; F. E. Field, Hinsdale Paper Company, Hinsdale, N. H.; G. R. Flinn, Flexible Steel Facing Company, Chicago, Worcester, Mass.; E. M. Frazier, Voorhees Rubber Manufacturing Company, Jersey City, N. J.; Fred H. Fuller, Kalamazoo Veg. Parchment Company, Kalamazoo, Mich.; Victor E. Fushburn, Groocton Paper Company, Inc., Groocton, N. H.

J. M. Geraghtry, Worthyr Paper Company, Mittineague, Mass.; E. W. Gibbons, Smith Paper Company, Lee, Mass.; E. H. Gilman, Bryant Paper Company, Kalamazoo, Mich.; F. H. Glanville, Chemical Paper Company, Holyoke; G. H. Gordon, Penman's, Ltd., Montreal, St. Hyacinthe, Que.; Charles J. Guenther, Stickle Steam Specialties Company, Boston; E. W. Guiterman, National Aniline and Chemical Company, Boston; Jos. F. Gunderman, Kearny Wire Works, Kearny, N. J.

N. H. Hackett, Eastern Manufacturing Company, South Brewer, Me.; N. S. Haxey, Parker Young Company, Lincoln, N. H.; Robert O. Harper, B. D. Rising Paper Company, Housatonic, Mass.; J. S. Harrington, Kamargo Supply Company, Watertown, N. Y.; Tom Harvey, Gardner-Harvey Company, Middletown, Ohio; Chas. E. Hayden, C. E. Hayden Mill Supply Company; J. H. Hayes, The Waterbury Felt Company, Waterbury; M. G. Hess, Manheim Manufacturing and Belting Company, Manheim, Pa.; A. H. Holbrook, English China Clays Sales Company, New York City; Harold Holden, Vera Chemical Corporation, Stoneham, Mass.; Thomas Holt, Racquith River Paper Company, Potsdam, N. Y.; C. L. Horter, Rex Paper Company; L. E. Housley, Voorhees Rubber Manufacturing Company, Jersey City, N. J.; J. W. Hulihan, The Wickes Boiler Company, New York City; W. F. Hussey, Waterville Iron Works, Waterville, Me.

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How can White Water loss be reduced?

This is a question of paramount importance to every pulp and paper mill.

There are some new mills which have practically established a "Closed system" by utilizing white water, and their system of fiber recovery is such that the white water must flood the mill basement before it can escape.

Many mills, perhaps, cannot be rearranged sufficiently to establish a "closed system," but in all cases much can be done. Our suggestions are:

1. Install a Bird Save-all. This recovers much of the fiber for direct return—and filters the waste water which passes through.
2. Equip the mill with Bird Self-cleaning Shower Pipes and supply these with white water filtered by the Bird Save-all.

The combination results in saving both stock and water.

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FROTH TROUBLES IN PAPER MILLS*

By B. B. Best of the Western Paper Makers' Chemical Co., Kalamazoo, Mich.

Foaming in paper making can be from two causes, chemical action releasing gas, or by means of mechanical whipping of air into the mass. Either cause can originate the trouble, and it is evident from a study of the materials used and the process of paper making that such a condition as the building up of froth will come about at various times more so than under other conditions.

For chemical action causing foam, we can point to that of alum on carbonates in the water, decay in organic materials is a prolific source of gas formation, and this we have with us continually in paper manufacture.

Mechanical action causing foaming is observed in beaters with the roll whipping air into the stock, leakage of air into pumps due to leaky connections or the suction not being kept full with stock, the dropping of streams of pulp onto the surface of liquids, and high speed agitators.

We may be moving along with the machine nicely settled down, and with no appreciable trouble from froth, and then there begins a sudden and persistent collection of froth on the wet end that upsets our production. We may be using an old stock as part of the furnish, and keep using from the same lot as received from the mill, but while there may be quite an amount of this stock without frothing materials, yet at a certain time we can run into a quantity of the stock that contains a lot of glue used as a top sizing or adhesive, and something has to be done to counteract what follows. We may get into a new lot of filler after running a while on an old lot satisfactorily, and while no trouble was experienced with the old material, the inoffensive looking new filler was introducing a carbonate, which, of course, will give foam with alum. Many variables are entering into the furnish at all times, and while froth may not bother us generally, there are recurring bursts of it that makes us devote a great deal of our time then, to taking care of its troubles.

Why Foam Is So Persistent

When one considers what must be done with the stock in the short time it is mixed with a large amount of water on the wet end of the machine, and looks at the nature of the stock regarded from a froth standpoint, we can readily understand the resultant troubles. On grouping all the froth characteristics for consideration, we can see why the froth is so persistent at the slices and will build up in spite of sprays.

Over sixty million tons of ore are handled by froth each year, in what is called the flotation process. Air is blown into a mixture of water and certain oils (pine oil and eucalyptus oil are used amongst others) and the finely ground ore, and the bubbles get coated by the metal in the ore, float to the top and are skimmed

*Presented at the convention of the American Pulp and Paper Mill Superintendents' Association, Springfield, Mass.

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off the top of the vat. The fact of froth having this property is commercialized in another line of manufacture, but a great source of trouble in the paper industry. The bubbles of froth on the paper machines are armor plated by the coating of filler and fiber they pick up, and will build up an actual content of solids, which will break away with excess and cause the foam spots, color spots and other like troubles. The bubble that does not get a chance to float will be carried on down the wire and not break until the greater proportions of water has left the sheet, and then there not being sufficient fluidity of the stock to mat the fiber over where the bubble burst, a thin place in the paper results, and on holding the paper up to the light, one sees objectionable spotting.

Surface Tension

Every liquid has a characteristic which is called surface tension. The surface tension of a liquid is that property of the surface which tends to pull or keep the surface to the smallest possible area; that is the body of the liquid is being pulled continually to the shape of a ball as in the case of drops of water or the balls of shot which molten lead forms when dropped from a shot tower. Mercury, or quicksilver, has a surface tension of about seven times that of water, so that we note the meniscus formed by the surface of mercury is quite pronounced compared to that of water.

Surface Viscosity

When substances are dissolved in liquids we have another characteristic to that of surface tension. That is surface viscosity, or the property of considerable strength to the surface skin or film of the liquid, and a pocket of gas introduced below the surface of the liquid will have a film of the liquid of considerable strength around it. Any substance with colloidal properties will give persistent froth with water because of the great strength of the film formed on the bubbles. Pure liquids will not foam, but in paper making we introduce many materials with colloidal properties in solution and then we introduce filler and fiber which all help to strengthen and stabilize the bubbles produced. To get a fairly permanent foam, the surface film must be sufficiently viscous in itself or must be stabilized in some way. This can be done by introducing a powder such as we have with fiber, filler, and the like in paper making.

Formation of Gas

The formation of gas in the liquids due to action of decay in organic matter, alum on hard water and carbonates, and the whipping in of air, will give bubbles that are strong enough to be permanent due to the high viscosity of the surface film of the solutions or mixtures with the solid matter of the stock. An analysis of a mass of froth showed fiber, rosin, filler, coloring matter, etc., with an ash of 3 per cent.

To prevent froth troubles then, we must break the bubbles or else break down the surface viscosity, or in other words the power or force holding the bubble walls intact, and to this, we can use a spray to break the bubbles mechanically, an oily material to change the surface viscosity physically, or a material such as alum, to change the chemical composition of the solution.

Numerous Other Troubles

The use of unmodified mineral and animal oils while reducing the troublesome froth, gives rise to numerous other troubles in that the dirt and slime adhering to the walls of spouts and vats becomes loosened by the action of these oils, and presses gum up and the paper is rendered unsalable from dirt, and we must look to certain treated oils to give the froth destroying properties without the other objectionable qualities.

Moving Spray on Head Box

A moving spray on the head box of the machine is good practice, as this will tend to cover the whole area of the pond with bubble-breaking drops of water, instead of allowing an eddy to collect such a quantity of froth there will be some sweep right through under the slice before the spray can act to break up all the froth.

In the washer room the use of an oily medium is found very effective, but this of course should be carefully regulated so as to obviate introducing harmful qualities in the pulp, as untreated oil will loosen slime, etc., collecting on the sides of spouts and vats.

Removal by Cooking and Washing

The removal of objectionable material by cooking and washing is advisable, and there are various procedures followed on the different stocks used. Old paper stock such as paper shavings top sized with glue or starch, coated papers, and the like, will handle much better if they are cooked and washed free of this surface-film-forming substance.

Fillers or other materials containing gas evolving substances will require care in use, and this property should be tested out and kept on record.

Hard water with carbonates will cause frothing with alum. Water containing organic matter will introduce carbon dioxide bubbles.

Poorly washed sulphite will introduce viscous liquids.

Pulp made from sour wood and sometimes from green wood will cause frothing, so that the proper aging is required of the wood stock pile.

If sufficient alum is not present to interact with the rosin size in addition to the other materials required, the colloid properties of the size will promote froth.

Dyes a Source of Foam

Dyes, especially the red dyes, such as Crocien Scarlet and Acid Orange, are a source of foam, and spots from foam in colored paper are especially noticeable due to the spot carrying a varying quantity of color compared to the surrounding sheet. In calendar staining, the frothing due to the viscous solution of the color is especially objectionable. The action of alum on Ultramarine Blue will cause the evolution of sulphuretted hydrogen. If acetic acid is used for dissolving color and Carbon Black is also used a persistent froth will be caused owing to the evolution of gas from the acid and the bubble-coating property of the Carbon Black. Any of the pigment colors will tend to make a persistent froth due to their bubble-coating property.

The use of glue, casein, starch, etc., in the beaters will give froth troubles owing to the high surface viscosity of the solution substances.

Slow stock has viscous properties which tend to prevent bubbles floating to the surface and breaking there, whereas free stock will give the opposite characteristics.

Graham Waste Paper Co. Burned

BOSTON, Mass., June 6, 1923.—The three-story brick plant of the Patrick H. Graham Waste Paper Company was swept by a three-alarm fire early Saturday morning. The loss was estimated at between $40,000 and $65,000 by Robert T. Graham, general manager and treasurer of the company. The building is located at 123 East Dedham street, South End.

The blaze for a time threatened the lumber, coal and manufacturing section of the district. Hundreds of bales of waste paper were ablaze at one time. Fanned by a brisk wind, the flames appeared to have a big start on the firemen before the first alarm was pulled in. Flames were shooting from the doors and windows on all sides when the firemen arrived, and second and third alarms were sent in in quick succession. Six firemen were overcome by smoke from the burning paper, but were revived and returned to their posts of duty.

Mr. Graham, who is head of the waste paper company, is also commissioner of markets for the city of Boston. He said there were about 3,000 tons of paper in the building.

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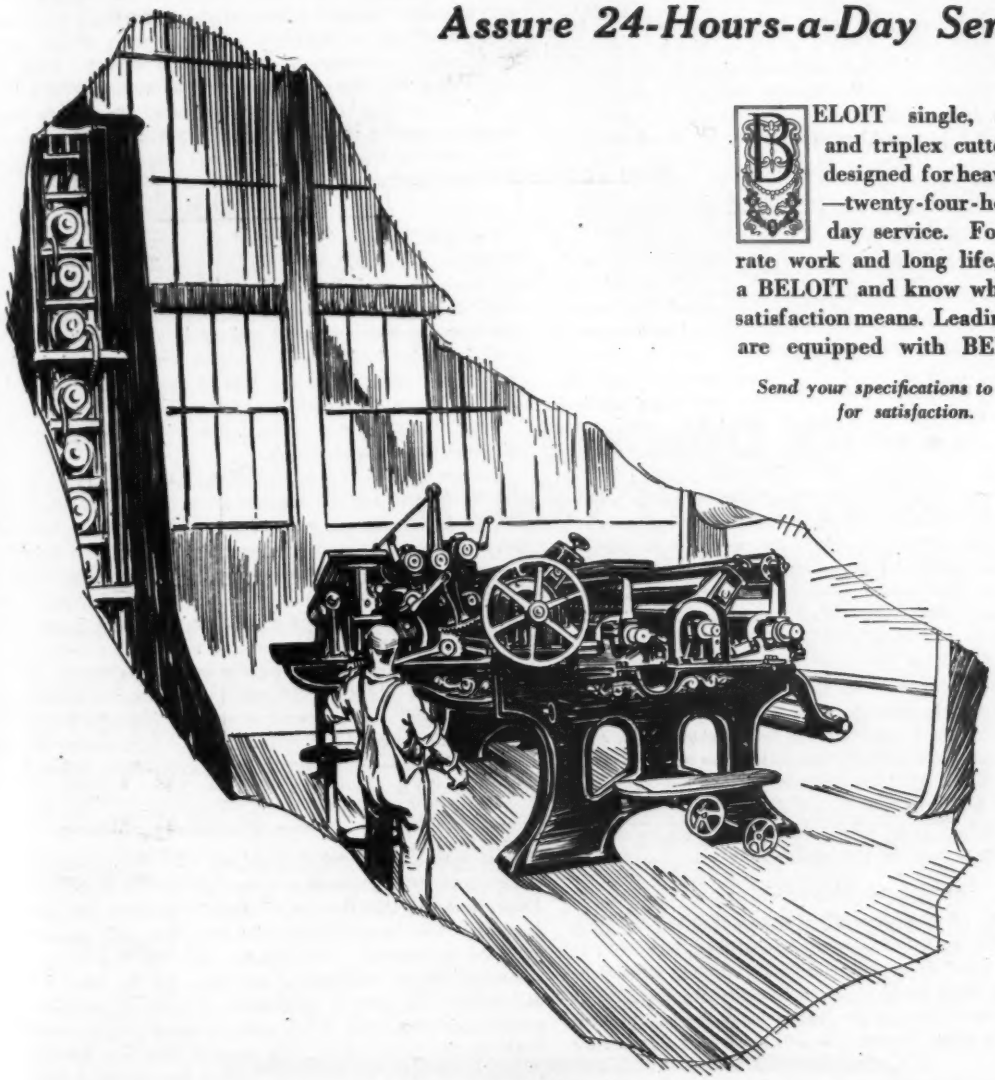

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SULPHITE MILL CONTROL*

By O. L. Berger, of the G. D. Jenssen Co., New York

In this paper I shall only discuss such control as is now used, or could be used, to assist the superintendent in his daily routine work. I have found that much of the technical work carried on in some mills is really scientific research work of no immediate help to the operator while its ultimate value in assisting the industry at large in obtaining information for future use is of great importance.

As the manufacture of sulphite pulp really starts in the woods it is evident that the first step in control should be taken in the pulpwood camps. It is significant that the word "slashing" has become the name for cut over timberlands in this country. "Slashing" is a good name. Everything is "slashed down," big trees, little trees, young trees and seed trees. Nothing is left but the brush pile and a wonderful opportunity for the forest fire which is sure to come to rob the land of all fertility for years to come. Forestry control is probably the most crying necessity in the paper industry today and let us hope that steps will be taken so that a few trees at least will be left for our children.

Mistakes in Buying Pulpwood

Taking it for granted that the woods operator knows his business and gets the maximum value out of his limits, it is up to the pulp manufacturer to buy the wood. He buys a "cord" of wood and he buys nothing. A "cord" is 128 cu. ft. of wood piled regardless of size, crooks and protruding knots. Actual measurements have shown that there is a variation of 20 per cent in the solid wood content of a cord of wood of different diameters and this difference can even be larger if the sticks are knotty and crooked. If the pulpwood is bought according to board feet measure the difference is even greater. One thousand ft. of 4 in. logs contains for instance 296 cu. ft. of solid wood, while 1,000 ft. of 24 in. logs contains only 127 cu. ft. No wonder the "yield" changes without any apparent cause. In the Scandinavian countries pulpwood is bought as solid wood and we should do the same. If we buy 100 cu. ft. of wood there should be no dispute except as to rot and correct species. If we buy spruce, we should not be satisfied with balsam or jackpine. The control of the incoming wood in most mills is left to a scaler or wood yard foreman. If we realize that 60 per cent of the cost of the sulphite is in the pulpwood, we would probably put more stress on this control. I would recommend you to spend a little time once in a while with your scaler in the wood yard, and if you do, you probably will find reason to carry your grievances to the main office. A papermaker will not stand for any variation in the grade of sulphite he puts in his beater, nor is he satisfied to buy a ton of wet pulp and not know how much fiber he is getting. You sulphite superintendents are exactly in the same position as regards your pulpwood.

Storing of Pulpwood

The proper storing of the pulpwood to protect it from fire, decay and worms should be controlled, also the use of the wood so as to consume the oldest wood first. Many mills are "saving money" by using wood directly from the cars and letting the old wood rot in the yard. As the wood loses 10 per cent in value for each year it is stored from decay alone, I think you will agree that this is poor economy.

In preparing the wood for the chipper there are two main things to control, namely, waste of good wood in the barking operation and the proper cleaning according to grade of pulp manufactured. It is useless to be as careful if news print sulphite is wanted as if you made high grade bleached pulp. It is however a good thing to remember that most of the specks in the finished pulp originate in the wood and that a careful sorting and inspection in the wood room is the only remedy.

Making of Chips

The making of chips is a very important step in the manufacture of sulphite and here is where your laboratory can be of great help. The chips should be tested, for size at least twice each day and the superintendent's attention called to any variations. The test figures should be plotted as a graphic curve so variations can be seen at a glance. By proper feeding of the wood to the chipper and a careful physical upkeep of chipper, crusher and chip screens there should be no trouble in obtaining chips 90 per cent perfect, containing a minimum of sawdust and slivers. Some mills are also testing the chips for moisture and weighing the total amount going to the chip loft, but very few miles are able to regulate the further treatment according to the variation in the moisture, so the real value for most mills in this case would be as a final check on the wood room.

Acid Making

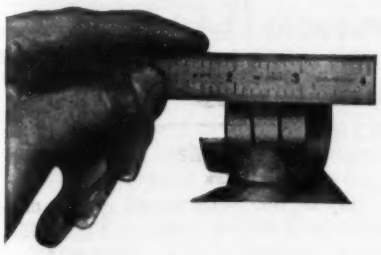
The acid making is essentially a chemical process and is controlled by analytical tests. The recording pyrometers and gas testing machines are helpful in keeping a constant gas while the acid itself should be tested frequently to guard against variations. A meter on the water for acid making is useful and the total water used should be checked against sulphur consumed and the theoretical amount of sulphur in the raw acid to establish the chemical balance of the acid-making operation and the efficiency of the acid system. A constant gas test and constant flow of water is generally a good safeguard against acid trouble.

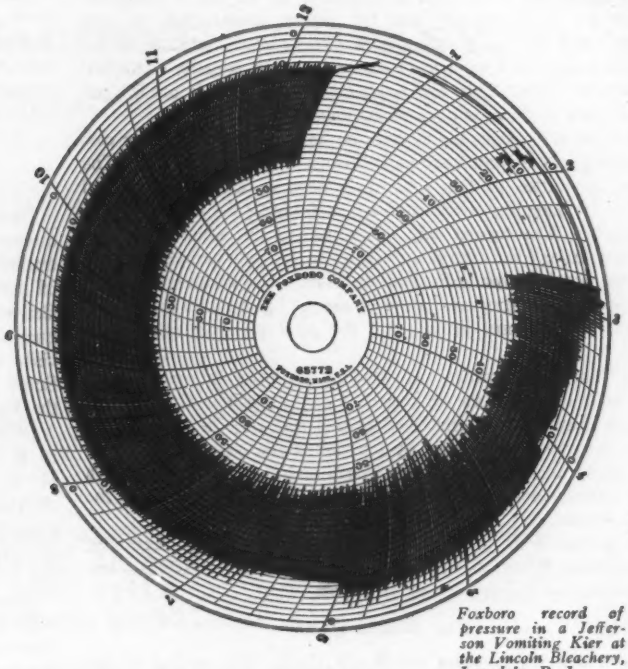
The presence of SO_3 in the burner gas is regarded by many as very detrimental and gas washers are now being installed to remove all SO_3 before the gas reaches the acid system. I hardly believe that SO_3 plays an important part in the cooking of sulphite, as it is neutralized by the lime and precipitated as gypsum, which hardily influences the chemical reaction in the digester. What is of more importance to guard against is free sulphur, which is easily brought into the acid through sublimation and which will cause a decomposition of the cooking acid during the cook, forming free SO_2, which will attack the fibres directly and cause dark and brittle pulp. A gas washer will also remove free sulphur from the burner gas and eliminate all danger from this source. A gas washer is therefore very helpful and will no doubt be in general use before long as a control of the burner gas.

Steam Flowmeters

The control of the digesters and recording thermometers, pressure gauges and steam regulators is too well known to be discussed. I think, however, that the use of steam flowmeters for each digester has given such wonderful results that they will soon be used as standard equipment. A flowmeter will tell not alone the total amount of steam consumed at any time, but the rate of the inflow and enables the cook to economize on steam at periods when not needed and besides this it has proven a great help in avoiding peak-loads on the steam plant. The control used for determination of the finishing point of the cook is also too generally known to be discussed. I had an opportunity recently to study the Decker cooking process used at Price Brothers sulphite mill at Kenogami, Quebec. This process consists mainly in the injection of hot liquor and gas from a digester that is being finished into one just going up to pressure. Reports from the mill claim an enormous saving in steam and above all a perfect control of the cooking with increased yield and a stronger and cleaner pulp. This process is patented and will no doubt be received with interest when it is put on the market.

*Presented at the Convention of the American Pulp and Paper Mill Superintendents' Association, Springfield, Mass.





Foxboro record of pressure in a Jefferson Vomiting Kier at the Lincoln Bleachery, Lonsdale, R. I.

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For full information write for Bulletin BH 98-2.

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The unretouched photographs reproduced above show a Foxboro Helical Tube taken from stock. Note the uniformity of every convolution—striking proof of the superiority of the Foxboro method of drawing in the temper.

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THE COMPASS OF INDUSTRY

5301

Reclaiming of the Acid

The reclaiming of the acid is controlled by the use of invidivual coolers for each digester and the proper construction of acid storage tanks and reclaiming towers. The correct "building up" of the raw acid to cooking acid of desired strength is easily controlled by chemical tests. This test is all the control that is needed and tells the tale of good or poor reclaiming.

After the pulp leaves the digester on its way to the beater or car, the main things to watch are millefffluents, screenings and dirt. The Waste Committee of the TAPPI is now working out standard methods for sampling whitewater and is studying the various makes of savealls. The correct way of controlling the whitewater is to take samples at fixed intervals to be tested for pulp and also to take frequent samples from individual machines. The knotscreen should be inspected often to guard against good pulp going into the screenings as well as knots getting into the good pulp through broken plates.

The counting of specks and grading for color is systematized. Some mills figure specks per pound of stock which is more correct than per square foot of pulpsheet as this will vary in thickness.

The strength test obtained by the use of the ballmill and handsheet can be done in a reasonable length of time so as to be of help to the operator and in any case it is valuable where grading of the pulp is wanted.

The testing of the pulp for moisture is generally made according to the standard methods adopted by the Technical Associations and are accepted as decisive in case of disputes.

The Bleach Plant

Now a few words about the bleach plant. The control of the sludge for chlorine is often neglected. I know of cases where 10 per cent of the available chlorine was wasted in the sludge. The actual bleaching operation where high temperatures are employed necessitate the use of a recording thermometer to guard against overheating. The use of the tintometer for determination of color desired has proven of great value. After the bleached pulp is washed it should be tested for free chlorine which will deteriorate the fiber if allowed to remain in the pulp.

The pulp is now finally ready to go to the beaters or to the railroad car for shipment. Suppose that all possible care has been taken to secure strong clean pulp. At this point we know how easy it is to get into trouble by allowing external dirt to get into the pulp. We find dirt coming in through open windows, from smokestacks and ashblowers, dirty floors and workmen stepping on the pulp with muddy feet. We also find that proper care is not taken in cleaning and lining the railroad cars and that dirt will get on the pulp from dust and through cracks in car doors. The railroad cars should be carefully swept, floors, walls and ceilings, and lined with strong, clean paper and the pulp piles covered with paper so that no loose dust and dirt can get in contact with the pulp during railroad transportation.

The life of a sulphite superintendent is indeed one of chasing dirt and he will never be successful if he allows his mill to be dirty and sloppy.

Co-operation with Chemist

In the first paragraph of this paper I mentioned "scientific research." It is easy to get this mixed up with mill control. Don't think that your chemist cooking in his laboratory will be able to control your operations. Co-operate with him and tell him what you would like him to do and I am sure he will be anxious to help you. That is what he is there for and he has a wonderful opportunity to be useful to you if you will let him.

There are today some 129 sulphite mills on this continent and I don't think two mills operate alike. They use different size chips, different acid, different temperatures, pressures and cooking time. There is I suppose one certain method that is the best, but nobody knows which. How are we going to find out? Look at the oil and steel industries. How did they come to their present methods of scientific operation? By spending money for the best brains to work out their problems. The sulphite manufacturers could do the same. If each mill paid a small sum of money toward the upkeep of a research laboratory working under mill conditions, I venture to say that we would be surprised to know how little we really knew about our own business.

Superintendents Meet in Bangor

[FROM OUR REGULAR CORRESPONDENT.]

BANGOR, Me., May 28, 1923..—The annual meeting of the Northeastern division of the American Pulp and Paper Mills Superintendents Association, composed of mill superintendents and officials of mills in Maine, New Hampshire and Vermont, was held at the Bangor House last Wednesday, with a business session in the forenoon and a banquet at 7 p. m. The afternoon was devoted to visits at the plants of the Eastern Manufacturing Company in South Brewer, the Orono Pulp and Paper Company in Orono and the Penobscot Chemical Fibre Company at Great Works.

Officers were elected as follows: Chairman, B. T. Larrabee, S. D. Warren Company, Cumberland Mills; first vice chairman, H. H. Hackett, Eastern Manufacturing Company; second vice chairman, K. E. Terry, S. D. Warren Company; third vice chairman, L. L. LaDuke, Groveton Paper Company, Groveton, N. H.; secretary and treasurer, W. D. Sommerville, Eastern Manufacturing Company.

Covers were laid for 35 at the banquet in the private dining room of the Bangor House and the affair was most enjoyable. Addresses were given by James A. Reilly of the American Writing Paper Company, Holyoke, Mass., on "Cost Accounting as Applied to Pulp and Paper Manfacturing," and by Walter Rooney of the Albany Felt Company, who spoke on the making of felt and a trip through Japan. Although technical in character, both addresses were delivered in a manner highly entertaining and were replete with facts and figures of especial value to the industry.

During the banquet excellent orchestra music was furnished and a number of songs were sung in a very pleasing manner by Carleton Hackett of South Brewer.

The next meeting of the association will be more in the nature of a social gathering and will be a two days' affair, Groveton, N. H., being selected and the date the first week of next October.

St. Regis Timber Limits Threatened By Fire

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., June 4, 1923.—The 65,000 acre tract of timber land in the Lake Ozonia region owned by the St. Regis Paper Company, was menaced by forest fire the latter part of last week which started in the heart of the tract, miles from the settlement. Hundreds of fire fighters were handicapped in their efforts to reach the burning portion by the heavy underbrush but in the early hours of Saturday morning they managed to break through and speedily put the flames under control.

The St. Regis property lies in townships 11 and 12 of Franklin county and is valued at more than $200,000. The timber on the tract is mostly young pine and spruce.

District Ranger James H. Hopkins also reported that a blaze at Lake Plumadore and the Saranac-Lake Placid branch of the Delaware and Hudson Railroad which had eaten through seven acres of young pine trees on the railroad's plantation was under control. Fire fighters were summoned from Loon Lake and Lake Kushaqua, in addition to section hands of the D. & H. who battled through the night with the conflagration. Spread of the blaze further into the Adirondacks has been prevented.

The Adirondack timber is dry as tinder after the heavy drouth and every precaution is being taken by Ranger Hopkins. Every available man has been put into service to prevent any serious blaze and warnings are being given to visitors in the timber region.

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Is it good business to invest more than 99% in front of the reels and hedge on less than 1% for a Winder capable of making rolls equal to the most exacting modern requirements?

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Very truly yours,

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James A. Cameron

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CAMACHINE

WASTE IN THE PULP AND PAPER INDUSTRY*

By B. T. McBain, Assistant General Manager, Nekoosa, Edwards Paper Company

Time is the stuff that life is made of. Don't waste it. If you have a minute's time to spare, use it to improve yourself; prepare yourself to fill the shoes of your superior officer next above and prepare your assistant to relieve you of the burdens of your present position.

Waste—A Disease

My subject touches upon one of the most vital diseases of the pulp and paper industry today; yes, of every industry in America, of everything American, as I see it and by this I mean the United States and Canada. We have had so many years of plenty that we have become careless, even to the last degree. I think we waste enough of everything each year in the pulp and paper industry alone in America to run a 200-ton mill full product, for many years. By we, I mean all of us, you and you and you and myself.

Extravagance

During the World's War, which seems yet to be bothering some of our Allies, we in America became careless, extravagant and wasteful. We made large sums of money; the returns to the manufacturer were large; the profits great. We could have everything and anything we wanted. If what we had didn't suit, we charged it off, threw it away and bought another. Everyone seemed to forget there was to be another day; tomorrow was not thought of; we all lived for the present, like the gnat which is born but today, yet today must die. Overnight, the change came. We hardly knew how to meet the situation; we had dollar ideas and penny incomes. We had driven to our work in high powered cars, if we worked at all; we had been used to two men for every job. The new situation was not understandable; surely it wouldn't—couldn't last long. Some woke up early, wrote off their losses and started anew; others thought to beat the new conditions; but that couldn't be done.

Profit Must Come from Waste

Today many of us are still hoping against hope that the price of paper will go up enough to allow us to show a decent profit. Gentlemen, the sooner we put that idea behind us, the better. What we must do is get busy, use all the authority we have and even exceed that authority to stop present and prevent future waste. It is everywhere, in some form, waste in wood, in raw material, in finished product, in Sales. Waste.

Worse Than Stealing

To waste, in my opinion, is worse than to steal. That is a hard thing to say, because all of us are in the waste column. If we are, and are not making every effort to prevent waste, we are doing worse than stealing what we are wasting. Why? If stolen, usually someone gets some good out of the stolen article. If wasted, no one does. Stealing can be stopped; so can waste. The Law prevents stealing. The law should be as strong against waste and should be enforced. There is no law, however; common sense should make us all stop it. It is waste today that prevents many American manufacturers from showing in the profit column instead of in the red. It is waste today in my opinion, that prohibits many American manufacturers from getting into the export business and doing some business with the markets of the World at a profit, instead of at home, alone and at a loss.

Can Increase Production

I have been preaching this anti-waste doctrine for many years. In one large mill, the campaign we started netted 20 per cent greater production and a very material reduction in cost. In others, while the returns were not so great, the increase by savings alone put the business on the right side of the ledger.

There are many mills today, mill officers, mill managers, mill superintendents, who will sit back and say "That don't mean me, I am not guilty,"—Yet when you go into their mills, you will find stock wasting into the river, waste in power, waste in steam, waste in coal, waste in everything, but particularly waste in labor, Time.

Specialists Needed

We all have specialists in our mills in our particular line of manufacture; but few of us have specialists in the saving of waste. Most of our mills employ cost accountants, and rightly so, who put in expensive systems to watch the disbursement of nails and like material from the mill store, the amount of paint or aniline delivered to the mills and the woolen felts, wires and jackets delivered to the machines; but the value of these same articles is being wasted many times each day in other ways, without any way of checking them. What the boss doesn't know, doesn't hurt him and nothing is being done to prevent this loss—Waste.

Generally Speaking

I can start from the wood lot and follow the wood to the mill, through the various processes to the car and even to its final use in the plant of the consumer, whoever he may be and show you waste; yes, waste to the point of making you disgusted with such an industry if you didn't have the right and the authority to stop it. Go home, gentlemen, for a few moments. Your minds are now on your daily work. Follow me through your plant, please:

The Wood Pile

The wood in the pile—see that rotten log? That tree should never have been felled; but if down before its value was determined, it should not have been shipped. Waste of labor in cutting and loading, waste of freight in delivery, waste of labor unloading and worse than anything else, rot and worms go together, your log pile is endangered by contact with it. There are many such logs; great is the waste.

Methods of handling wood from pile to mill make it necessary to deliver these logs when their turn comes, more waste of labor, the quality of your product is endangered. An error happens, some of it gets into the chip bin or goes to the grinder room. It is not even good fuel, you get no product from it, waste of all equipment and labor in the handling ensues; but you do get dirt and in the case of groundwood, you get infection which shows up in the pile of stored laps and then again there is waste.

Power Machinery

See that engine running that wood room; the exhaust steam can be used; but is going to waste. Another wood room is operated by direct connected water wheel installed thirty years ago, probably never cleaned since installed and wasting over half the water going through the flume while the number of gears and belts in use show another waste of 25 per cent to 50 per cent of the power the wheel does produce.

If an old, out of date water wheel must be used, it will pay to get a small sand blast and give it a thorough cleaning inside, at least once a year. The waste in most plants on this account is great, many times almost 50 per cent of the possible power. But if you do clean them, know that they are cleaned inside, don't take someone's say for it.

The Boiler Plant

Look at the steam presure—some mills are still using boilers that are little better than junk. Steam driven pumps, hand firing of coal, poor handling of hog, improperly designed furnaces, poor draft, lack of meters on water and steam, improper control of air, etc.,

*Read at Convention of American Pulp and Paper Association Superintendents, Springfield, Mass.

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are all points to show whether the efficiency possible in the boiler room is at a point where there is sure to be waste. Coal costs for power and heating are putting many mills to the bad.

Fire System

Are you using the steam fire pumps for general service, and work where an up to date centrifugal or plunger high efficiency pump would pump twice the water for half the cost? Is your fire pump of any value for emergency us in case of fire if it is being so used?

Labor

Follow the wood to car or to the pulp mill grinders or chippers and check up on each man. In most plants 10 per cent of the labor is waste; in some, considerably more.

Fibre Mills

Because of the length of fiber, the loss is not so great as in groundwood plants; but there is waste from chippers, poorly made chips, chip screens, blow pits, screens, deckers, wet machines, liquor waste in making, steam waste in cooking, liquor waste in reclaiming and recovery, chemical waste in possible by-products, sludge waste in soda and sulphates. Some soda mills are saving 85 per cent of their original lime by recalcining their sludge. Laws prevent the discharge of sludge and other mill waste into streams. Thank the Law.

Pulp Grinders

Check up the power used per ton of pulp on the grinders. Some mills are wasting from 10 per cent to 40 per cent of the power on the grinders because of improper or insufficient use of burs, poor supervision by foremen; not running the stock at proper temperature, poor speed control, and various other reasons.

Pumping Equipment

Follow the pulp from grinder pits to screens. Very poorly designed, out of date pumps are wasting 25 to 50 per cent of the power used, either because of over speed or of improper type for the service.

Screens

The screens, in many mills, are discharging or rejecting good fibre because of the speed of screens or improper consistency of the stock, waste of power and fibre, as well as labor and equipment producing the wood and pulp to the screens.

Thickeners

The deckers are leaky and are passing good stock around the ends of cylinders, due to poor packing and poor maintenance. "But that isn't being wasted," I hear some say. "Because we use all our white water"; but in following up all avenues of waste of white water, a large stream sometimes as rich as 4 pounds per 1,000 gallons, is found wasting into the sewer and river, 4 pounds in 1,000 gallons is 10 per cent of the original consistency of the stock at the screens, or going to the deckers, and what is commonly called ½ per cent consistency.

Screenings of Value

The tailings rejected in most groundwood mills are considered of little value. Some are saved and sold in good times; but in poor times, wasted. These contain some of the best fibre of the log. In grinding wood, two distinctly different fibres are encountered: the hard, annular rings and that soft punky intercellular material between these rings. In my opinion, two distinct and different processes are necessary to properly handle these two kinds of fibre; that which the screens reject must be handled by a refiner, many good types of which are on the market and are in use in some mills, making marketable No. 1 pulp out of this waste. Again, the pump from decker chest, the agitater, the belts and gears in use, are all wasting power for one reason or another.

Beaters

The beater line is not run up to speed on account of overload, or low voltage, or dirty runners in water wheels, for one of many other causes and the beaters are operated 10 per cent or more slower than they should be and the beater rolls have not been ground perfect and true; waste of capacity, beating surface, labor, everything before and possibly everything following, because in some mills the machine production is governed by beating capacity.

Piping

Follow on into the machine room basement. Water and stock pumps are all wasting power. Why? Because of improperly placed or poorly designed and too small piping, as well as old, worn out pumps or pumps placed when the paper machine was running 250 feet, are still being used with the speed at 500 feet or more, by simply speeding them up—Waste.

Paper Machine Screens

Are the paper machine screens wasting stock? If any fibre is being rejected, it has a value—save it. Why withhold these causes of waste longer from the junk man? There are probably half a dozen water pumps supplying water where one central water system with proper filter would do the work with a saving of from 50 per cent to 75 per cent of the power, saving also maintenance, labor and material.

Suction Pump

What kind of a suction pump is used and is it doing its work in an economical manner?

Clothing

Look into the life of wires, felts and jackets—why does the felt wear out in two weeks with old rusty iron felt rolls when with rubber covered rolls the life might be doubled—waste. Where is the white water going from machine mixing box and how much is being wasted from the saveall under couch?

Steam for Drying

Look into the drying pressure and use of steam per pound or ton of paper and get someone versed in the scientific drying of paper to show you where you can save the 25 per cent to 50 per cent of the steam now being wasted and how you can get more paper and better paper at the same time. Again, the vapor arising from the paper is probably being blown out of doors and wasted, while it contains valuable heat units for re-use either in drying or in heating the room, or to supply hot water for various production purposes. Heating engineers are available at no cost, to explain this waste.

Broke

Follow the paper from dryers to calenders, to reel and to winder—weigh the broke that goes through the convenient broke hole, or holes, into the basement. Some mills show as high as 15 per cent of the paper made going back to the beaters as broke—waste that can be cut in two, three and even four by proper follow up; there's a reason for all waste—eliminate the cause, no matter who or what.

Hoods, Etc.

Dryer felts are many times damaged or worn out before half their proper life is gotten from them. I have seen this caused by sulphuric acid in the sulphite used or from excessive use of alum, also by improperly designed hoods, causing a wet streak that even a dryer felt dryer could not correct. The shorter life is waste—remove the cause. An hour per day average is enough to wash up and change clothing. If more is used, it is wasted.

Programs or Running Schedules

I might just refer to improper handling of orders, too frequent changes of weights and quality as a cause for waste—making grades for which the mill is not properly equipped—another waste; careless handling of the paper in the cutter and finishing rooms; on the cutters and by the finishers.

The cut price salesman is a great source of waste. In fact, a

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Experience

The world of science and invention has progressed to the point where it is both possible and practicable to find a substitute for almost anything.

No one, however, has yet been able to offer a substitute for that which we have learned to call "Experience." Ability, integrity and responsibility are expected of every business organization—and they are sterling attributes, indeed. But it is experience which is the mother of wisdom and discretion, pointing out the paths to be chosen and the methods to be adopted.

May we remind you that this is our thirty-seventh year?

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dissatisfied customer is waste, especially if the product delivered must be sold a second time to the same or a new man. I could write of waste and fill this book; the more one studies the subject, the more places he finds where dollars have been and are still going to waste in one form or another in almost every mill. Industrial accidents are a waste in many ways; how some mills get by without wasting more lives and limbs is beyond me.

He Who Knows It All

But, one of the worst causes of waste is the Superintendent who thinks he knows it all, who thinks he is too good to belong to this section of the American Paper & Pulp Association, for the man who thinks he knows it all and cannot learn from his fellow man, his competitor, if you please, is not only going backward, but is at a point where others can learn little from him, except not to do as he does.

Eyes, But Cannot See

The next worst cause of waste is the owner, the manager, or the Superintendent who will not see when his errors are pointed out to him. He does not deserve to and cannot be expected to get into line.

Savings Reduce Cost

However, I believe that with the saving of all forms of waste in the Pulp and Paper Industry, many plants now in the red can be put into the pay class, not by demand increasing the selling price; but by the savings reducing the cost.

In Conclusion

If I have said anything herein of value to anyone, my time at least, has not been wasted. Thank you.

$75,000,000 Paper Merger Rumored Again

MONTREAL, Que., June 5, 1923.—The rumor of a large merger of pulp and paper companies in the St. Maurice district is taken seriously in Montreal, and this week there was brisk activity on the Stock Exchange in the securities of the various companies mentioned, especially those of the Laurentide Company, which made notable advances in price. It is stated that interests behind the Laurentide Company and the Union Bag and Paper Corporation which controls the St. Maurice Paper Company, have already been in consultation and that several proposals looking to the merger of the two companies have been brought forward. Negotiations along this line may be continued independently of any final plan that may be developed for a grand merger of the four mills already mentioned in these columns; Laurentide, St. Maurice, Belgo, and Wayagamack. This latter combination, it has been estimated, would call for capitalization in the neighborhood of $75,000,000 and would bring the new holding organization to a place among the first half dozen in Canada in extent and volume of securities. There is some talk which suggests that there may be a cash purchase of St. Maurice Paper and indicating that Laurentide will be the dominant factor and that the title of that company will prevail after the merger.

Certain formalities have yet to be complied with in relation to the acquisition of the Belgo Company by Canadian interests and a special meeting of the shareholders of the Belgian-owned concern has been called for June 19, the outcome of which will give the clear title to the new owners of the company. This meeting is for the purpose of ratifying a special by-law authorizing the sale and transfer of all the assets, undertakings and business of the company as a going concern and authorizing the distribution of the purchase price received for the sale to the newly-formed Belgo Canadian Paper Company, recently formed by Canadian interests to buy the property from its owners in Belgium.

If this merger is carried through on the lines now anticipated, it will mean a combined news print production of practically one thousand tons a day, which is a larger total by far than any other existing company in Canada to-day and a close second to the production of the International Paper Company, the largest on this continent, which runs about 1,100 tons when at maximum capacity. The total production of all grades of paper and pulp among the four mills would run somewhat as follows:

News print	970 tons
Board	40 tons
Kraft paper	120 tons
Kraft pulp	180 tons
Total	1,310 tons

These totals take into consideration the completion of present plans of expansion among the mills interested. For instance, the St. Maurice Paper Company produces now 115 tons of news print daily, but has a surplus capacity of groundwood and sulphite sufficient for 115 tons of news print daily. The company plans, it is understood, to instal a couple of new news print machines to enable it to take care of its surplus pulp, and thus bring its total production to 230 tons of news print daily. This surplus pulp, by the way, is now being sold outside as a result of the very strong demand for both products. In addition it produces 60 tons of kraft pulp. The Belgo Paper Company, is now producing about 320 tons of news print but this will be increased to 380 by the addition of a new machine. Laurentide is producing about 360 tons daily with 40 tons of board, making a total of about 400 tons. Wayagamack produces 120 tons of wrapping paper and has surplus pulp of about the same amount. The production figures of the four mills mentioned in merger talk would thus run as follows:

Laurentide	400 tons
Belgo	380 tons
St. Maurice	290 tons
Wayagamack	240 tons
Total	1,310 tons

C. R. McMillian, vice president of the Union Bag and Paper Corporation, when seen in New York on Tuesday by a representative of the PAPER TRADE JOURNAL said there was no foundation in fact for the revival of the rumor of the merger of the mills in the St. Maurice Valley, and was accounted for undoubtedly by the reorganization of the Belgo Paper Company.

Buys Wisconsin Engine Co.

HYDE PARK, Mass., June 6, 1923.—The B. F. Sturtevant Company has purchased the Wisconsin Engine Company, maker of Corliss pumping engines at Corliss, Wis.

This new acquisition covers nearly ten acres and the buildings have approximately 150,000 feet of floor space.

A full manufacturing and engineering staff will be maintained and closer cooperation given to western customers.

The new plant will be under the same direction as the other factories at Hyde Park, Galt, San Francisco, and Philadelphia with Ex-Governor Foss as President.

Harry W. Page has been selected as general manager and will be in entire charge of the Wisconsin plant.

Paul R. Browne Resigns from American Writing

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., June 4, 1923.—Paul R. Brownie, Comptroller of the American Writing Paper Company has tendered his resignation to be effective about June 1. His duties will probably be taken over for the present by L. S. Nold, recently appointed Treasurer. Henry L. Cassidy, statistician for the company, has also resigned, effective at once, and will probably locate in New York City.

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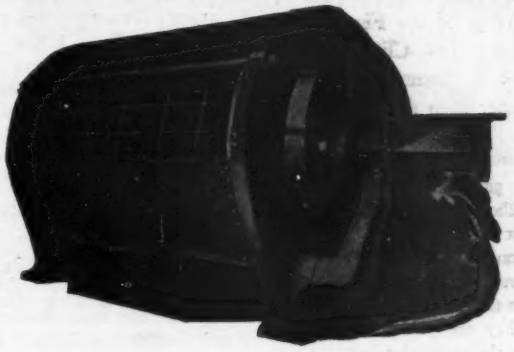

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DEMAND IN PHILADELPHIA SHOWS SOME IMPROVEMENT

Expansion in the Request for Paper Extends to All Branches of the Trade Although Not as Greatly to the Coarse as to the Fine Division—Keystone Paper Co. Is Organized by Fred S. Balch, lately in Charge of the Fine Paper Department of Edward Latimer, Jr.—Clifford Sigg Resigns From D. L. Ward Co. to Become Connected With Edward Lattimer, Jr.—Paper Men Attend Outing.

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, Pa., June 5, 1923.—The paper business has shown an improvement during the past week although the betterment was not so pronounced in the coarse paper market as in the fine.

Krafts are selling steadily and there is no very large supply on the market, mill deliveries being rather slow. The New York and Pennsylvania Company taking business on the basis of three months delivery and the Arrowhead Mills say they are from six to eight weeks behind. Fibers rather slow as to the deliveries but not so much as to sales and prices have now become quite steady. Tissues remain virtually without change. There continues to be much activity for all the lines of sheathing, roofing, deadening and other building papers. While there has been no quotable change in paper stock prices, there is much better buying by the mills for mixed and commons. The dealers regard this as the first evidence of mill interest in this grade of papers and are of opinion that the mill supplies are now nearing exhaustion and that very shortly they again will be in the market actively. The stock dealers believe that the mill men withheld their orders in the hope that prices would drop very decidedly, but since this did not come to pass they are again in the market for the raw materials which they must have to maintain their present production.

New Fine Paper Firm

A new paper house was added to the ranks of the local distributors during the week by Fred S. Balch, lately in charge of the Fine Paper Department of Edward Latimer, Jr., 126 N. 4th street. Mr. Balch has organized the Keystone Company and for the present has taken desk room in the building 718 Chestnut street but expects very shortly to sign a lease for a centrally located warehouse and office. The Keystone Company will do a general fine paper business, particularly in books, bonds and coated papers and it will aim to specialize on tonnage business. A number of mill connections are in process of completion but announcement for the present is withheld. Mr. Balch is widely known in printing circles from the fact that his father A. C. Balch, superintendent of the publishing plant of the J. B. Lippincott Company, is a prominent member of the Typothetæ. At the time when it waged warfare for the adoption by the paper distributors of the "Long List" Mr. Balch took out membership in the Paper Trades Division of the Typothetæ and the Latimer firm was the first in the city to issue the "Long List." Mr. Balch came to Latimers after service with the D. L. Ward Company which he entered upon discharge from service with the Colors in the Navy for two years.

Paper Men at Typothetæ Outing

Enough of the fine paper trade was present at the all day outing and 36th Annual Meeting of the Typothetæ of Philadelphia held during the week at the Cedarbrook Country Club, to constitute a very generous quorum of the Paper Trade Association. The outflow was due to a desire on the part of the paper men to testify by their presence the very cordial relations which exist between the two trades and which are the direct outcome of the bitter controversy a year or more ago over the "Long Price List." While that now is a dead issue the engendered friendship is very live. Among those in attendance at the printers outing—but as well the paper men's since they are associate and heavily contributing members were President Arthur B. Sherrill of the Philadelphia Paper Trade Association, and treasurer of Riegel & Co., together with James McCracken, its office manager; President Grellet Collins and Vice President Taylor of the Dill & Collins Company; President Leon Beck and Vice President Andrew Simon of the Charles Beck Company; Treasurer Raymond J. Considine and Sales Manager Papst of the Paper House of Pennsylvania; President George W. Ward and many members of the sales organization of the D. L. Ward Company; resident William S. Wilcox and Secretary Thomas Furlong of the Wilcox Walter Furlong Paper Company; Sales Manager Howard Satterthwaite of the Garrett-Buchanan Company; Sparta Fritz of the Whiting-Patterson Company; and Richard Hartung and John Franz of A. Hartung & Company, Inc.; President Raymond and Sales Manager Christine of the Raymond & McNutt Company.

Clifford Sigg Joins E. Latimer Jr.

Another change in personnel of very wide interest to the trade came with the announcement of the resignation from the D. L. Ward Company of Clifford Sigg who has been connected with that company for a decade and from the very beginning of his business life. He specialized in coarse papers and was regarded as one of the most active of the Ward sales force. Mr. Sigg has taken a position with E. Latimer Jr., 126 N. 4th street.

Collective Delivery Service Discussed

Improvements in delivery service particularly for outlying and suburban sections of the city and immediately beyond were the chief matters of discussion at the meeting of the Fine Paper Division of the Paper Trade Association of Philadelphia held during the week at the Bourse. For a long time the trade has been giving much attention over the problem of the rapidly increasing overhead consequent on that increased service which nowadays is the prime essential in selling. It is indeed in connection with this matter that the entire association invited N. A. Schoenbucher of the Statistical Department to visit the city and to make an exhaustive study of the situation in both the fine and coarse paper houses. The early arrival had been anticipated, but announcement was made that Mr. Schoenbucher is engaged in the West and will be delayed for perhaps a month, George W. Ward however presented the subject of a collective delivery service for the outlying sections, suggesting that instead of having each house send its own team with perhaps a small order to Frankford or Germantown or Kingsessing, these goods be sent to a Central point by the several firms and from there be delivered collectively.

MacAndrews & Forbes Increase Capital

An issue of 7,500 shares of capital stock of the MacAndrews & Forbes Company of Camden, manufacturers of builders and box boards has been authorized by the stockholders and it will be issued at a par of $100 and will be sold to employees under certain conditions, payment to be spread over a period of ten years. The company reported net earnings of $1,153,023 after Federal taxes had been paid, an increase of $369,035 over the preceding year and equal to $13.17 per share on the common stock outstanding and amounting to $7,495,000. In 1921 the company earned $8.20 per share. Installation of a new machine in the paper board department is under contemplation.

Expansion of Esparto Papers, Inc.

President Frederick C. Hasting of the Esparto Papers, Inc., Franklin Trust Company Building, was in Baltimore and Boston during the week in the course of a trip he is making for the purpose of concluding negotiations for the opening of distributing points by paper jobbers of the company's line of book papers, writ-

(*Continued on page* 48)

Let Them Drink to your business health in cups you sell

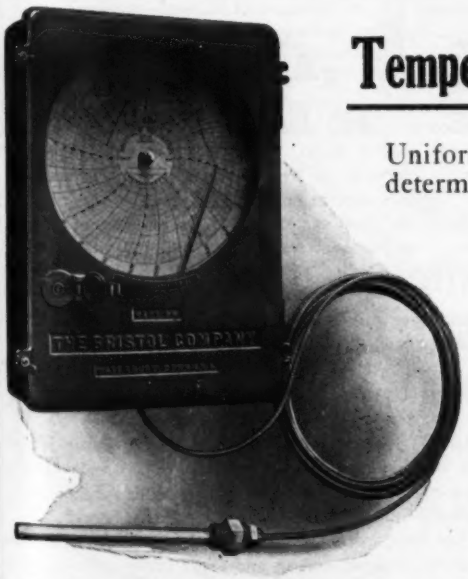
each drink a cup—each cup a sale for you and at lowest cost of any cup on the market.

At such prices SALES RESISTANCE IS NEGLIGIBLE and our direct advertising assistance in your city will get immediate results as it is now doing in many cities.

Burt's Paper Drinking Cups are made of fine white paper, without wax to make drinks taste, and are reinforced so holders are not necessary. They are kept under glass and cannot be wasted or soiled before use.

Cups retail at one fourth cent—dispensers at five dollars.

F. N. Burt Company, Ltd.
Paper Cup Division
Buffalo, N. Y.



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Bristol charts furnish a means of identifying instantly the conditions surrounding the product while in process of manufacture. These charts can be filed for future reference and comparison.

Bristol Recording Instruments are a real economy as the information they provide and the resulting plant efficiency offset many times their original cost.

Bulletin "B. E. 303" gives more extensive information relating to Bristol Recording Instruments and their adaptability for every phase of paper or pulp mill manufacture. It will be a pleasure to send it to you.

THE BRISTOL COMPANY :: Waterbury, Conn., U. S. A.

The most extensive line of recording instruments in the world.

Recent Incorporations

FREEDOM PAPER COMPANY., Manhattan, New York. Capital $45,000; Incorporators M. Schlanger, H. Lostfogel, B. Friedland. Attorney, I. Lowenbraun, 116 Nassau St., New York.

THE CHAMPION PAPER DISH COMPANY, Toledo, Ohio. Capital $150,000; Incorporators Ralph Sweera, George A. Vradenburg, Carleton W. Reade, Frank H. Geer, Henry A. Middleton.

PAPER MILLS CORPORATION, Wilmington, Delaware, manufacture paper, cardboard; capital $5,000,000. Corporation Trust company of America.

WORLD PLAYING CARD COMPANY, Wilmington, Delaware. Manufacturing of playing cards and games. Capital, $500,000.

ANGLO-AMERICAN PAPER BOX COMPANY, Manhattan, New York. Capital, $10,000. Incorporators: S. Eisenberg, I. Schreiber, A. Coblitz. Attorney, A. B. Albert, 305 Broadway, New York.

ADRIATIC MILL SUPPLY CORPORATION, Manhattan, New York paper and woolen stock, capital $25,000. Incorporators F. Mazzamuro, R. Paoline, A. Tacceta. Attorney, M. H. Schneider, 15 Park Row.

DEMAND IN PHILADELPHIA

(*Continued from page* 46)

ings, mimeograph, drawings and general printing papers imported by the firm from a group of English and Scotch Mills and all made of the esparto grass fiber. The company shortly hopes to have completed a list of distributors in the cities visited and in addition in Chicago, Rochester and other centers. The company was organized over six months ago and its head is very widely known through long association with the Dill & Collins Company.

Pulp Supply for N. Y. & Penn. Co.

Announcement comes from Lock Haven, Pa., of the purchase of a large acreage of land for the purpose of reforestration by the New York and Pennsylvania Company in preparation for acquisition of pulp in the future manufacture of papers. The tract consists of 400 acres on which there has been planted 400,000 spruce and 100,000 popular seedlings and it is located in the Potato Knob district of the Dill settlement just outside Lock Haven. The seedlings are from two to six inches in height and were secured through the Pennsylvania nurseries and from Connecticut. The work of transplanting was conducted by John Ereckenridge and E. O. Erhart, of the Armstrong Forest Company, reforestration department.

International Co.'s New Offices

Removal of the Philadelphia offices of the International Paper Company to larger quarters in the Victory Building where the firm formerly occupied room 502 to the third floor recently was made. The company now has under lease the two offices on the third floor occupying rooms 320 and 321. They are under the management of F. C. Rowley who looks after the territorial sales.

General News Notes

C. E. Lynch representing the Milwaukee Lace Paper Sales Company, has taken an office in the Victory Building, 1011 Chestnut street, occupying room 233 where he will look after the sales territory represented in the Philadelphia District looking after the needs of the box and confectionery trade.

Nathaniel Saxe head of the Saxe Paper Company, 320 Race street is being congratulated upon the birth of daughter Natalie. The new arrival in the family is the first born.

Owing to the sale of the building now occupied by Max Dee as a sales room and warehouse where he conducts the business of the Dee Paper Company at 227 Church street the firm will be forced to vacate the premises this week and other quarters are now being sought.

At a meeting of the Directors of the Pennsylvania Salt Manufacturing Company held last week, John M. Scott was appointed to the directorate to fill the place made vacant by the death of John Story Jenks. Arthur E. Price, President of the company was added to the Board of Directors of the Market Street Title and Trust Company.

A new 64-inch Seybold cutter of the latest type is being installed on an especially built concrete foundation in the basement of the paper warehouse of A. S. Datz & Son, South Marshall below Market street. The firm is now stocking the Resolute Ledgers made by the Neenah Paper Company and K. V. P. Bond made by the Kalamazoo Vegetable Parchment Company.

The Charles Beck Company has in the press and soon will have ready for distribution a comprehensive hand book of the Beck Papers which devotes a page to each brand and which lists in an unusually accessible manner all the information necessary to intelligent buying. There also is included tables of substance numbers, cut card scales, envelope cuts and other information of real value to the consumers and converters of paper.

Wolf Brothers, manufacturers of envelopes, 330 N. 12th street have added to the standard line a complete commercial size assortment of glassine outlook envelope running from size of 6½ to 9. There has been installed a large number of envelope machines and equipment for the manufacture flat drinking cups for which the firm has large contracts with the railroads and jobbing trade. So great has been the demand for its products that production is being confined to domestic needs and very little exporting is being done. There is with the increased equipment a production aggregating 3,500,000 per day.

To Build Paper Mill in Pownal, Vt.

[FROM OUR REGULAR CORRESPONDENT.]

NORTH ADAMS, Mass., June 4, 1923.—The Vermont Power and and Paper Company has been incorporated in Massachusetts to develop a power and paper business in Pownal, Vt. The new concern has an authorized capital of $250,000 and is now ready to transact business.

Satisfactory arrangements have been made with A. H. Barber Leather Company for the purchase of valuable property owned by him at Pownal, including the water power there, and plans are now in preparation for the erection of a paper mill plant with a capacity of 25 tons per day.

The business will be principally one of converting waste paper into the finished product of bogus mandilla, chip stocks and board products for the general market.

Among those interested in North Adams are J. T. Potter, attorney, J. B. Stebbins, contractor, and F. J. Barber, recently in the lumber business. In Boston, Albert A. Frederick, of the J. A. DeVito company, well-known waste paper house of New England, and George Osgood Dudley of the Sears Roebuck company are interested.

A competent paper maker has been engaged by the company for active duty in the immediate future.

Green Bay Paper Novelty Co. Starts

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 5, 1923.—The Green Bay Paper Novelty Company has started the manufacture on a limited scale of paper towels, using a machine invented by officers of the company. It is said the machine is the only one of its kind in the world.

The plant has been working day and night shifts for some time for the production of paper napkins and paper tablecloths, for which there is an enormous demand. The product is shipped to all parts of the United States and markets are being built up in Mexico and South America.

About 65 persons now are employed on the two shifts and the mill is operating at utmost capacity. The tissue paper from which the novelties are manufactured is purchased largely from Green Bay paper mills.

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OSKARSTROM	Easy Bleaching Sulphite
DIESEN	Bleached Sulphate
ESSVIK	Unbleached Sulphite
KROGSTAD	Easy Bleaching Sulphite

Stocks Carried on Dock For Prompt Delivery

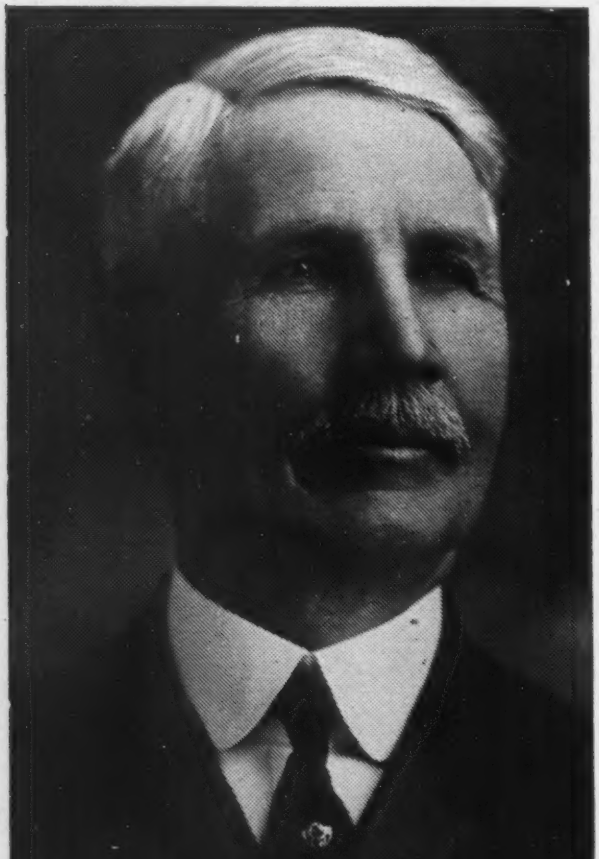
CHRISTIANIA NEW YORK GOTHENBURG

Obituary

John Strange

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 5, 1923.—John Strange, Neenah, president of the John Strange Paper Company and the John Strange Pail Company of Menasha, and the Stevens Point Pulp and Paper Company of McDill, died suddenly of heart disease while delivering an address to the Rotary Club at New London, Wis., on Monday, May 28. The funeral was held on Thursday from the late home



JOHN STRANGE

at Neenah with prominent paper manufacturers and state officials from Wisconsin and nearby states in attendance.

Mr. Strange, who was 71, was a pioneer business man of the Fox river valley. He was prominent in political affairs of the state as well as in the paper industry. Mr. Strange served Wisconsin as lieutenant governor from 1909 to 1911 and since then has been a very prominent worker for prohibition, delivering numerous lectures for the cause.

Mr. Strange died in the midst of his speech. He was talking in a conversational tone, without apparent effort, when he crumpled to the floor and expired. He had not been complaining of feeling ill and the early part of the day had been spent in a leisurely manner.

The decedent was born in the Fox river valley where he spent almost all his life. In his boyhood he worked in a woodenware factory, took up special work at Beloit College, taught school, operated a merchandise store, conducted a retail lumberyard. In 1899 he became interested in the manufacture of lumber in Neenah and a few years later built a woodenware factory which was converted into a wrapping paper mill.

Mr. Strange's survivors include two sons, Hugh and Paul; two daughters, Mrs. George Athearn, Oshkosh, and Mrs. Joseph MacLaughlin, Chicago.

Alfred Mellor

PHILADELPHIA, Pa., June 4, 1923.—Alfred Mellor, vice president of the Box board and licorice manufacturing firm of MacAndrews & Forbes Company, South Camden, but retired from active participation for some years, died on Wednesday of last week at his home 152 West Walnut Lane, Germantown, Philadelphia. He was 82 years old and is survived by his widow and two sons. In compliance with his request the body is to be cremated and the ashes scattered by the wind in Massachusetts where he had a summer home. He was a native of Philadelphia, the son of Thomas and Martha Bancroft Mellor and was a graduate in 1863, from Haverford College and later from the College of Pharmacy. He served in the Civil War as a member of the First City Troop. He was an organizer of the Old American Cricket Club and the Dorian Cricket Club; was an original member of the Union League and a member of the Franklin Institute, the Academy of Fine Arts, the Royal Society of Art, London, and the Merion and Manheim Clubs. He engaged in business as manufacturing chemist in the firms of Mellor & Rittenhouse and of Parish & Mellor. The first named became consolidated with MacAndrews & Forbes and then with the American Tobacco Company but upon the dissolution of the combination then existing by Governmental direction he became an executive of the MacAndrews & Forbes Company.

Cease Opposition to Cushnoc Compromise

[FROM OUR REGULAR CORRESPONDENT.]

AUGUSTA, Me., June 4, 1923.—All opposition was withdrawn to the compromise which was petitioned for by the trustees of the Cushnoc and Kennebec Paper Companies, whereby the Irving National Bank of New York City, the State and City Bank and the Central National Bank, both of Richmond, Va., shall surrender to the trustees of the paper companies, $102,000 in bonds of the Kennebec company now held by these banks. The case was heard before F. J. C. Little, referee in bankruptcy, in this city last Friday.

Some time before the companies were petitioned into bankruptcy bonds of the Kennebec Paper Company to the amount of $270,000 were delivered to these banks as collateral for a loan. Of this amount $66,000 in bonds are to be retained by the banks and the compromise does not cover them. The $204,000 remaining is covered by the compromise and 50 per cent or $102,000 of these bonds will be returned.

The question has arisen as to whether or not the delivery of these bonds constituted a preferential payment and the negotiations of the parties on both sides resulted in the proposal of this compromise which was petitioned for.

Attorneys Boyd B. Jones, of Boston, and Charles B. Carter, of Lewiston, appeared for creditor companies, the Great Northern Paper Company, the Eastern Pulpwood Company and the American Mutual Liability Assurance Corporation, who originally opposed the compromise. Leonard Pierce, of Portland, and Everett H. Maxcy, of Augusta, appeared for the trustees of the paper companies, and Attorneys Robert N. Dunham, of New York, and W. R. Pattangall appeared for the banks.

Attorney Pierce, who is thoroughly familiar with the matter, took the stand for some time and was questioned by those who opposed the compromise. Dean Langmuir, of the Equitable Trust Company, of New York, who was connected with the companies at the time of the delivery of the bonds, was present as a witness.

New York Trade Jottings

Lawton Dix has just returned from Europe where he has been visiting for the past two months studying paper conditions for the *New York American*.

* * *

E. H. Kellogg visited his brother, R. S. Kellogg of the News Print Service Bureau, for several days last week with his bride, Miss Isabelle Little, of Washington.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, left for Dayton, O., on Tuesday to attend the annual "Wilart" party of paper men at the Dayton Country Club. He will return on Friday.

* * *

Friends in this city of Eugene E. Meurer, president and general manager of the Central Paper Company, Muskegon, Mich., are congratulating him upon his marriage on May 24 to Miss Margaret Wasserman.

* * *

Frank A. Munsey last week bought *The Globe*, an evening paper, and merged it with *The Sun*. This will cut off a considerable consumption of news print in the city, but Munsey has always coveted an Associated Press franchise for *The Sun* and now he has it.

* * *

The Salesmen's Association of the Paper Industry held its regular business meeting on Monday morning in the Forest Industries Club. It is the first organization to hold a meeting in the new club, which is in the Pershing Square Building. Eighteen out of the thirty members in the city attended.

* * *

Edward A. Westfall and his wife, of Boston, returned to the United States on the *Laconia* on Monday. Mr. Westfall was in Norway and Sweden studying the pulp situation for some time. He said that since the strike of the sulphite workers was settled in April the pulp industry has been rapidly approaching normal although prices are still high due to the increase in wages and decrease in production brought about by the strike. He cited the Swedish methods of reforestation as excellent saying that every time a tree is cut down a sapling is planted to take its place.

* * *

More than 150 prominent members of the paper industry attended the luncheon of the new Forest Industries Club in the Pershing Square Building at noon on Monday. Arthur Hastings, of H. G. Craig & Co.; Dr. Hugh P. Baker, of the American Paper and Pulp Association; L. B. Steward, acting secretary of the club, and K. S. Warner, of the John Sarle Company, were among the speakers. They pointed out the great value of having a central meeting place for the industry and urged all who had its interests at heart to join. The club will be formally opened in September, but those desiring information may obtain it by writing to Mr. Steward at the Pershing Square Building address.

* * *

I. S. Reynolds has resigned as vice president and general sales manager of Coy, Hunt & Co., paper merchants, New York, which position he assumed July 1 of last year. Although Mr. Reynolds is not ready to announce his definite plans for the future he will continue in the paper business and has established offices at 15 East 40th street, Room 1104, telephone Murray Hill 4651. Mr. Reynolds is one of the most experienced paper men in the country, his first connection with the business dating back to 1902 when he became connected with one of the largest fine paper houses in Chicago. In 1908 he opened the Chicago sales office for the mills now known as the Nekoosa-Edwards Paper Company and about four years ago became manager of sales for the Groveton Paper Company and the Claremont Paper Company with headquarters in New York.

To Build Paper Mill in Kansas City

KANSAS CITY, Mo., June 4, 1923.—The American Paper Manufacturing Company plans to build a wrapping paper mill here. The plant at the start will have a capacity of only 15 tons per day, but this capacity will be gradually expanded.

The officers of the company are Lex L. Morgan, president; K. B. Uhls, vice president; D. H. Greene, treasurer; Baxter Brown, secretary. Benjamin N. Phillips, of Port Angeles, Wash., is a member of the board.

Keith Paper Co. Elects Officers

TURNER FALLS, Mass., June 4, 1923.—The Keith Paper Company at its annual meeting elected officers as follows: President, A. Pagenstecher; vice-president, Jonathan Bulkley; clerk and treasurer, Albert R. Smith; assistant treasurer, Wallace B. Marston. The directors are: A. Pagenstecher, New York City; R. Pagenstecher, New York City; Jonathan Bulkley, New York City; W. D. Russell, New York City; Alvah Crocker, Fitchburg; E. A. Jones, Pittsfield, and Albert I. Smith, Turner Falls.

Missisquoi Paper Co. Improvements

[FROM OUR REGULAR CORRESPONDENT.]

SHELDON SPRINGS, Vt., June 6, 1923.—The Missisquoi Pulp and Paper Company is adding a building to house a new paper machine of the same size and make as the present equipment. Also there will be constructed a new power house, a large concrete chimney, and a few smaller improvements will be made incident to completing practically a new paper mill. The scheduled improvements will cost approximately $500,000.

To Be General Manager of Stevens & Thompson

GLENS FALLS, N. Y., June 4, 1923.—Edward T. Jones has been appointed general manager of the Stevens & Thompson Paper Company of Middle Falls, succeeding H. P. Nostrand, resigned. Mr. Jones has been chief engineer of the plant for the past four years.

Mr. Norstrand the retiring general manager will go to Plattsburg as a member of a new company that is to build a large paper mill there.

To Confer with Importers of Kraft Paper

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., June 6.—The Customs Service of the Treasury Department has announced that a conference will be held here on June 8 with importers of kraft paper. The conference is in connection with the investigation which has been made of the alleged dumping of Norwegian kraft paper on the American market.

Now With Deerfield Valley Paper Co.

MONROE BRIDGE, Mass., June 4, 1923.—William Brouth, recently with the Minnesota and Ontario Paper Company, of International Fall, Minn., is now superintendent of the mill here of the Deerfield Valley Paper Company, succeeding superintendent Tifft recently deceased.

Another Paper Mill for Alabama

BIRMINGHAM, Ala., June 1, 1923.—W. H. Sullivan, president of the Great Southern Lumber Company, of Bogalusa and his official family have just been inspecting the Warrior river with the idea in mind of erecting a great paper manufacturing and lumber plant on its banks.

Editorial

Vol. LXXVI New York, June 7, 1923 No. 23
HENRY J. BERGER, Editor

OPEN PRICE ASSOCIATIONS ILLEGAL

The decision of the United States Supreme Court last Monday that open price associations are illegal will have a far reaching effect on trade associations in all industries. The specific case with which the tribunal dealt was that of the linseed crushers, who had formed an association through the Armstrong Bureau in Chicago. The paper board manufacturers recently became associated with the bureau under substantially the same sort of contract as the linseed crushers.

Justice McReynolds, in delivering the opinion for the court, reversed the decision of the United States District Court for the Northern District of Illinois, which held that the linseed crushers organization with the Armstrong Bureau was entirely legal. This is the second decision of the kind, the last having been made some time ago against the Hardwood Lumber Association. Thus there can no longer be any doubt of what the government interprets to be in violation of the Sherman law so far as the conduct of trade associations is concerned.

Organizations of this kind are comparatively recent and the anti-trust law sufficiently vague so that it is difficult for a trade association to know when it is within and when it is without the pale. All that it has to judge by is court decisions and doubtless all the associations in the paper industry welcome this most recent one for its clear definition of the law.

"This bureau," said Justice McReynolds, in handing down the decision, "conducts a so-called 'exchange,' through which one subscribing manufacturer may obtain detailed information concerning the affairs of others doing a like business. The defendant 'crushers' constitute one of the groups who contract for this service. They manufacture and distribute throughout the Union a very large part of the linseed products consumed therein, and prior to the challenged combination were active, unrestrained competitors. Sometime in September or October, 1918, each of them entered into an identical written 'subscription agreement' with the Armstrong bureau, and a year thereafter signed another, not essentially different."

According to the description by Justice McReynolds, under the agreement signed by the linseed crushers with the Armstrong bureau, the crushers were to secure through the bureau the following things:

Comprehensive data as to market trade and manufacturing conditions in the linseed oil industry.

Economies in manufacture and sale by frank exchange of accurate information.

The latest authentic information concerning the credit of buyers.

A broader market for cake and meal.

Establishment of uniform cost accounting systems.

Fair and just freight tariffs and classifications.

Definite standardization of the products of the industry.

Economies in the development of foreign markets and increase of sales therein.

Stabilization of the flaxseed market so far as lawful.

Shipment of cake and meal to the consumer from the nearest point of production.

The crushers agreed, the Justice found, to turn over to the bureau full reports of all sales, quotations, offerings and other information required.

"The obvious policy," said Justice McReynolds, "indeed, the declared purpose of the arrangement was to submerge the competition theretofore existing among the subscribers and substitute 'intelligent competition' or 'open competition,' to eliminate 'unintelligent selfishness,' and establish '100 per cent confidence,' to the end that the members might 'stand out from the crowd as substantial co-workers under modern co-operative business methods.'

"In American Column and Lumber Company vs. United States, we considered a combination of manufacturers got up to effectuate this new conception of confidence and competition and held it within the inhibition of the Sherman Act because of the inevitable tendency to destroy real competition, as long understood, and thereby restrain trade. Our conclusion there can not be reconciled with the somewhat earlier opinion and judgment of the court below, they are in direct conflict.

"The Sherman Act was intended to secure equality of opportunity and to protect the public against evils commonly incident to monopolies and those abnormal contracts and combinations which tend directly to suppress the conflict for advantage called competition—the play of the contending forces ordinarily engendered by honest desire for gain.

"Certain it is that the defendants are associated in a new form of combination and are resorting to methods which are not normal. If, looking at the entire contract by which they are bound together, in the light of what has been done under it, the Court can see that its necessary tendency is to suppress competition in trade between the States the combination must be declared unlawful. That such is its tendency, we think, must be affirmed."

Referring to the operations of the defendants, he said:

"Each subscriber agreed to furnish a schedule of prices and terms and adhere thereto—unless more onerous ones were obtained—until prepared to give immediate notice of departure therefrom for relay for the bureau. Each also agreed, under penalty of fine, to attend a monthly meeting and report upon matters of interest to be there discussed, to comply with all reasonable requirements of the bureau and to divulge no secrets.

"In the absence of a purpose to monopolize or the compulsion that results from contract or agreement, the individual certainly may exercise great freedom, but concerted action through combination presents a wholly different problem and is forbidden when the necessary tendency is to destroy the kind of competition to which the public has long looked for protection."

SUPERINTENDENTS' CONVENTION A BIG SUCCESS

The committee of arrangements for the annual convention of the American Pulp and Paper Mill Superintendents' Association of Springfield and Holyoke last week is to be greatly commended for its excellent work. Not only was an admirable program arranged, but it was carried out in every particular to win the warm approval of all who attended the convention. The association cer-

tainly has made commendable progress in the comparatively few years of its existence, not only in the way of increasing its membership but in the substantial position it has come to occupy in the industry.

No small part of the growth and importance of the Superintendents' Association may be laid to the unusual good fellowship and esprit de corps which seem particularly characteristic of its meetings, conventions and other functions. The association is now and always has been ever since its organization on a strong financial basis and this especially has been a matter of much satisfaction to the officers who have labored untiringly to build the association.

Perhaps the circumstance which best bespeaks the important status of the Superintendents' Association is the growing regard in which it is held by the manufacturers. This is seen in the cooperation of many executives who have voluntarily taken upon themselves the payment of dues for their superintendents and in their interest in the welfare of the association otherwise. This was particularly manifested in the vicinity of Springfield by manufacturers who gave their time, money and services of their employees to make the convention a success.

Most important of all, however, in this respect is the communication received by association officials from Mr. Philip T. Dodge, president of the International Paper Company, as a result of which the machinery is now in operation to form a news division of the Superintendents' Association. This not only means a large increase in membership but it signifies the recognition of real merit in the association by the largest concern manufacturing paper in the world.

It should now be only a question of a short time until every mill on the continent is represented in the association by one or more of its superintendents.

Putting Chicoutimi Co. on Better Basis

LONDON, England, May 31, 1923.—Sir Frederick Becker, presiding at the annual meeting of the Becker Company, Limited, the concern which controls several Quebec pulp and paper subsidiaries, and of which he is chairman, said they were engaged in putting the Chicoutimi Company on a better financial basis. It was essential, he said, that the railway, of which they already had built about thirty miles, should be extended round Lake St. John, Quebec. Premier Taschereau had promised every facility for the company within the power of the Quebec Government, Sir Frederick said.

The British Minister of Overseas Trade had also been approached in the mater, Sir Frederick stated, but while he was sympathetic, they were in the hands of the Advisory Committee of the Ministry.

Demand in Boston Less Active

[FROM OUR REGULAR CORRESPONDENT.]

BOSTON, Mass., June 6, 1923.—There was a general falling off in the demand for paper, although prices were maintained.

The board market prices held about stationary, but demand slackened noticeably. One of the largest box board manufacturing plants in this territory was reported on the verge of closing, temporarily, because of the decreased demand.

There was a general weakening also in the demand for old papers and waste and prices fell off materially. The trade in general, however, is inclined to look upon the slackening as but temporary, and believes that conditions will return more to normal soon.

Holyoke Manufacturers Refuse Wage Increase

HOLYOKE, Mass., June 4.—The Allied Paper Trades Council, comprising the Eagle Lodge Papermakers and seven allied unions, which recently petitioned the paper manufacturers of Holyoke and vicinity for increase in wages of 10 per cent approximately, abolition of Saturday night work and guarantee of a certain number of days work each week were in receipt Sunday of a letter from the manufacturers as follows:

"Gentlemen: At a meeting of the paper manufacturers held yesterday, your request for increased wages was given further consideration and I am authorized to convey to you the following statements in connection with the situation.

"At the present time, and for several weeks past there has been a decided falling off in the amount of business received by the paper manufacturers in this section, which has necessitated the shutting down of several paper machines. Under such circumstances it is impossible to give favorable consideration to the question that would prolong the present unstable conditions in the industry.

"On January 15 of the present year a wage increase was made when conditions in the industry did not justify such action, but it was anticipated that we were approaching an era when a volume of sound business could be expected. However, such expectations were only partially realized, and the present outlook is one of uncertainty.

"The manufacturers desire at this time to again remind you of the fact that the wages paid the employees in the paper industry in this section are on the average higher than those paid for similar work in the industry in other sections of the country. In giving due consideration to the factors that enter into a question of this kind, and by the exercise of sound judgment, your request for the increased wages does not warrant favorable action."

Tonight the Allied Paper Trades Council met again and made public the letter in answer to the manufacturers, in which they practically threaten a strike. The letter is as follows:

"At a special meeting of the Allied Paper Trades Council held Sunday evening, June 3, your communication of May 29 was received and the following action taken:

"On and after June 11, if the demands of the Allied Paper Trades Council are not met drastic action will be taken."

Drastic action was not outlined but it is probable that a strike vote will follow, and then backed by this action they will endeavor to obtain a part at least of the demands previously made.

Salesmen Meet at Forest Industries Club

The Salesmen's Association of the Paper Industry was the first organization to use the rooms of the new Forest Industries Club in the Pershing Square Building. The New York salesmen, at their weekly meeting Monday, June 4, the day when the club's organization committee gave an informal reception to those interested in the club, went to the new clubrooms, and future meetings will be held in the City Club, until the new Forest Industries clubrooms are ready for regular occupancy.

The New York salesmen at this meeting were told that their Chicago co-workers are already beginning to formulate plans for the fall convention in October. Fred P. Whiteley, of the Howard Paper Company, has been made chairman of the general committee on arrangements for the Chicago meeting, which will be held on Tuesday, October 9, opening the three days of meeting which will feature the annual fall business conference. The meeting will be at the Drake Hotel, and sub-committees will begin work at once to make the salesmen's part of the program even bigger and better than the records established in preceding years.

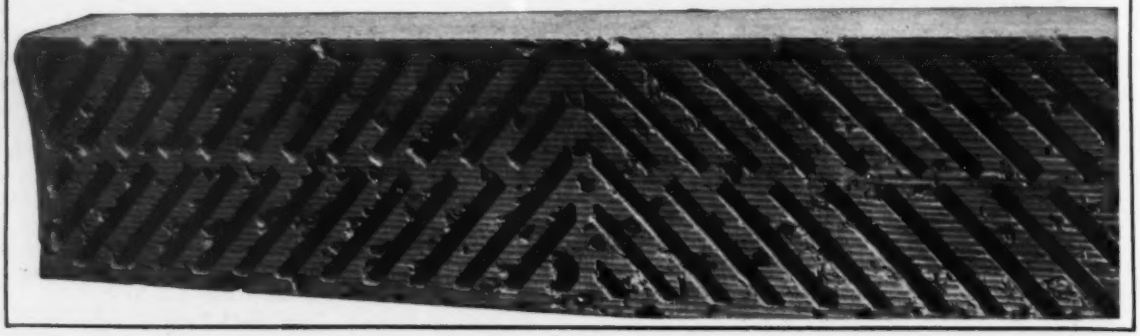
The Ohio district salesmen have fallen into line with a decision to hold monthly luncheon meetings like those being held in other paper making districts. R. J. Worrell, of the Mead Sales Company, has been made chairman of the membership and program committee.

Conclusive Evidence on Beater Filling

THE GENERAL use of Helin Beater Filling in European mills, and the great number of mills which have installed it in this country are significant. The better quality of pulp from beaters thus equipped is obvious. The increase to production is surprising. Specific facts and figures await your request.

FIBRE MAKING PROCESSES, Inc.
Chicago

The picture above shows Helin Beater Filling applied to a Hollander in an American mill.



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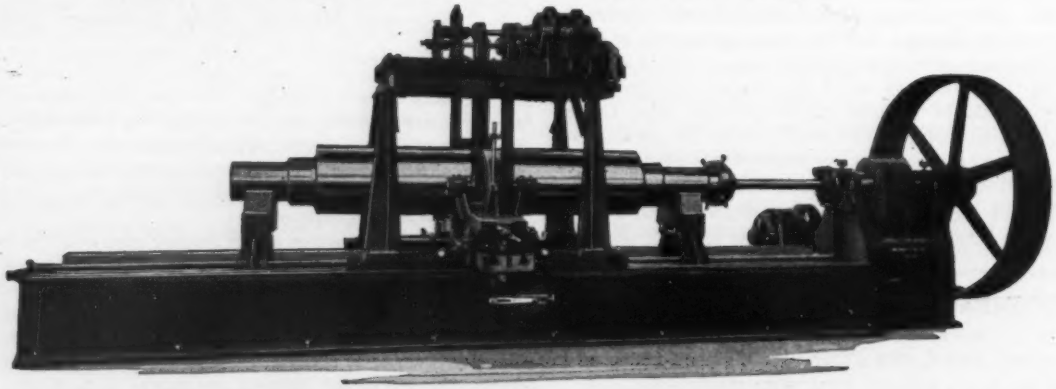
ROLL GRINDERS are the only machines of the kind fitted with automatic crowning device which develops a perfect crown without the use of a guide or former and repeated trying for the correct setting.



LOBDELL Calenders are equipped with Patent Electric Motor, Hydraulic or Ratchet Lift all operated from the floor.

LOBDELL Micrometer Calipers are handy and accurate.

LOBDELL CAR WHEEL CO. Est. 1836 **Wilmington, Del. U. S. A.**

Section of the
Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

A THEORETIC DISCUSSION OF THE REACTIONS OF PAPER MAKING*

By Jessie E. Minor[1] of the Collins Mfg. Co., North Wilbraham, Mass.

There is in the literature considerable data with reference to the physical and chemical changes which occur in the making of paper, but before this information can be tabulated in such a way as to be used to predict the reactions which will occur under a given set of conditions, the fundamental laws regulating reactions between substances in the colloidal state will need to be more clearly established than they are at present. For this reason it would seen that the recently published theories of Jacques Loeb of the Rockefeller Institute[3], which he has developed with reference to the proteins, should be subjected to the careful scrutiny of the students of cellulose chemistry.

Loeb's experimental work is without question a valuable contribution to our knowledge of the influence of hydrogen on concentration of a solution on the course of a reaction. His conclusions, supported as they are by the close agreement between experimental results and mathematical calculations, seem amply justified for the type of colloids studied. Whether it is possible to explain the behavior of all colloids on the laws which he has formulated is open to verification; indeed, he himself has left open some questions on the subject. But any work done with the thought of verifying or disputing his theories is sure to bring valuable information on the subject.

Because of the extensiveness of the work which would be needed to be done before the entire relation of Loeb's theories to the reactions of cellulose and papermaking could be elucidated, it has seemed worth while to prepare the following brief review of Loeb's work and its possible application to cellulose, based on our present knowledge of the subject in the hope that it may further turn the attention of cellulose chemists to the possibility of results from this method of attacking the subject.

Loeb's Statement

Loeb's statement is that only two laws are needed to define the colloidal state for any substance and that the characteristics of colloidal behavior can be explained mathematically from these two conditions, which are as follows:

1. The colloid is, at least to a very slight extent, capable of ionizing as an acid or as a base or as either an acid or a base, and forms true ionizable salts.

2. The larger ion of the colloid is held within a membrane, being unable to diffuse through its pores, whereas all the other ions of the solution are able to diffuse freely through these pores.

While Loeb disclaims entirely any relation between these laws and the older adsorption theory, a careful scrutiny of the theories will make it clear that Loeb's theory, which he has named that of the Donnan Membrane Equilibrium, although definitely disproving certain secondary tenets, is really an amplification of the fundamental adsorption theory.

This Donnan membrane may be either an artificial membrane or a surface formed by the cohesion of the ions or molecules forming the surface or the network of surfaces of an aggregate structure. The only condition is that one ion is held within this membrane structure, either because it is too large to penetrate the pores of the membrane or because of some electrical affinity such as a cohesion of the ions to form the membrane itself. On the basis of this membrane structure, Loeb has explained the source of the electrical charge upon the colloid aggregate, the power of colloids to swell in weak acids or weak alkalies, followed by a depression of swelling by stronger acids and bases, the direct influence of the valence of the ion upon the extent of the reaction, the influence of added acids and bases upon the swelling and the viscosity of the suspension, the mechanism of the solution of a colloid, the variation of colloids in sensitiveness to precipitation by small amounts of electrolytes, etc.

An Example

If a colloid were suspended, for example, in a solution of sodium hydroxide, it would form a sodium salt to an extent dependent upon the concentration of the sodium hydroxide in the solution. Since all salts are highly ionized in solution, this salt would be at once ionized and would give a definite amount of positive sodium ions which were free to diffuse and an equal amount of negative complex colloid ions which, either because of their size or because of some electrical affinity, could not diffuse. The positive sodium ions and the negative hydroxyl ions of the entire solution, being free to migrate throughout the pores of the fiber, would distribute themselves so that for each unit of the solution the product of the ions would be equal to the equilibrium constant for sodium hydroxide and this would be true on the inside of the membrane as well as on the outside. But within the membrane the concentration of the sodium ions must be the sum of those in combination with the

*Presented at the annual convention of TAPPI.
[1]Member of the Cellulose Committee of TAPPI.
[3]Proteins and the Theory of Colloidal Behavior, by Jacques Loeb, McGraw-Hill Publishing Company.

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complex ions and those in combination with the hydroxyl ions whereas outside of the membrane the sodium ion concentration must be entirely due to those ions which are in combination with the hydroxyl ions. Therefore, within the membrane, although the *product* of the sodium and hydroxyl ions is the same as outside of the membrane, there would be more positive sodium ions and less negative hydroxyl ions than are in the outer solution. Such an unequal distribution of ions must give rise to an electrical potential difference and Loeb has been able, in the case of the proteins which he studied, not only to show that such a potential difference does exist, but to make measurements of this difference which are in striking accord with the mathematical calculations based on concentrations. On the basis of these experiments he has declared that the charges carried by these colloid aggregates are not due to the preferential adsorption of ions from the solution but are due to the potential difference at the surface of the membrane. But when the interior of membrane is positive to the outside solution, the colloid acquires a negative charge, which is exactly what we would expect to find if this potential difference across the membrane functioned as a force accelerating the adsorption of negative ions upon the surface of the membrane.

The complex colloid confined within the membrane could not exert osmotic pressure, but the sodium ions in combination with them would be retained within the membrane by electrostatic attraction and would exert osmotic pressure. This osmotic pressure would cause the imbibition of water and a swelling of the membrane. In a very dilute caustic solution, where the concentration of sodium colloid salt as compared to the sodium hydroxide was relatively large, the potential difference would be large and the tendency to swell would be marked, but if the concentration of the sodium hydroxide were increased beyond a certain maximum, the potential difference and, therefore, the degree of swelling, would begin to decrease. The maximum swelling obtainable would be limited by the cohesive force which holds together the atoms which form the membrane and this cohesive force is probably, in certain places, a matter of secondary valence. Also, Loeb has in no way shown that the mutual repulsion of these adsorbed hydroxyl ions carrying similar charges may not assist in the swelling of the colloid.

According to Loeb's theory, the solution of the colloid would be brought about as a result of the swelling of the aggregates whereby the ultimate elements are forced apart mechanically to an extent which exceeds the limits of the forces of cohesion between the ions. The ultimate particles which this process would give to the solution would be isolated ions, isolated molecules, and possibly, small aggregates of ions and molecules. As soon as, through collision, these aggregates became sufficiently large to establish a Donnan membrane, the swelling would begin and it would continue until the interior osmotic force created a strain sufficient to rupture the aggregate.

The viscosity of such a solution would increase with the growth of these aggregates which obey the Donnan membrane equilibrium law thus removing water from solution, and Loeb has been able to verify a close parrallelism between the osmotic pressure and the viscosity of solutions.

When a Neutral Salt Is Added

If a neutral salt is added to an exactly neutral colloid, there should be no effect on the structure or electrical charge of the colloid, but if the colloid were highly ionized so that a potential difference did exist, then the influence of the added salt would bring about a depression of the potential difference, of the osmotic pressure, and of the viscosity of the solution. This depression is always due to the influence of the ion of the salt which has a charge which is opposite to that of the complex ion of the colloid, the ion of like charge being without effect unless it causes a replacement of the ion combined with the colloid. The amount of this depression depends directly on the concentration and valence of the active ion, the nature of the ion being without effect. In many cases the addition of a salt will alter the hydrogen ion concentration of the solution and this effect must be considered as separate from that of the nature of the ion. All positive ions depress the viscosity, swelling and osmotic pressure of sodium salts of colloids, the more so the higher the concentration and valence of the positive ions added, but independent of the nature of the negative ions used. In the same way all negative ions depress the viscosity, swelling and osmotic pressure of acid salts of colloids in amounts varying with the concentration and valence of the negative ions, but independent of the nature of the positive ions used.

While this Donnan membrane equilibrium theory, in all its details, does correlate a number of facts with regard to colloids, it, at least as yet, has not answered all the facts. Loeb himself has said that it cannot be used to explain why gelatine will swell in water at such a hydrogen ion concentration that no colloid ions can be present, for he will not admit that the potential difference which he is able to measure may be merely a force accelerating a weak adsorptive force which already exists at the surface. Neither will his theory explain why certain colloids can be salted out by large amounts of salts, certain salt effects upon the solubilities of colloids which are independent of the valence rule, and other irregularities, and for all of these Loeb is obliged to suggest the possibility of secondary valence effects.

How Far the Known Facts Are Covered

Turning now to the subject of cellulose and the colloidal conditions of papermaking, it would be of interest to see in how far the Donnan membrane equilibrium can be made to cover the known facts.

There is evidence in the literature that cellulose is capable of ionizing as a weak base and as a weak acid. The best accepted formulæ postulate the presence of primary alcohol groups which we would expect to be able to react with acids or with bases. Therefore, cellulose may be said to fulfill the first requirement for a Donnan membrane equilibrium. In order to verify this ionization power, the following qualitative experiments were carried out:

A small amount of rag pulp made from the best filter paper was beaten extensively in a pebble mill in order to give the maximum distension of the fiber structure. The fibers under the microscope showed considerable breaking and the resulting solution had a hydrogen ion concentration corresponding to a PH of about 3. Small amounts of this pulp were then squeezed dry and immersed in solutions of N/10 NaOH, N/100 NaOH, N/100 H_2SO_4 and N/10 H_2SO_4 respectively and, after thorough stirring, were allowed to remain from 1 to 10 hours. These suspensions were then poured on filter papers and washed from 2 to 8 times with distilled water. For each washing the fibers were picked off the filter paper with a needle and stirred into the solution of the wash water in order to insure thorough washing. The PH in each case was determined by dropping the solution of indicator directly on the pressed dry fibers. The indicators used were of the Clark and Lub series. In this way it was found that after the second washing the PH of the different solutions varied in the series from about 1 to 12 and several subsequent washings had no effect on this PH. This would seem to indicate that this PH variation was definitely due to an ionization of the cellulose and not to the effect of the adhering solution. A similar set of experiments were tried with some bleached sulphite pulp, similarly beaten in a pebble mill and similarly treated and washed. The PH values obtained in this case were almost identical with those obtained with rag pulp, which would seem to further indicate that the effect was due to the ionization of the cellulose itself and not to the effect of any additional impurity.

The effect of alkalies in bringing about a swelling of a cellulose suspension, together with a parallel increased viscosity or slowness of the suspension, is too well known to need experimentation. Apparently in this case the cohesive forces of the cellulose molecule strongly oppose any very excessive swelling, since without mechanical abrasion it is very difficult for the swelling act to penetrate the

interior of the fiber, and with the aid of abrasion as in a beater, the fiber very soon ruptures and peels off its outer layers, giving the milky appearing, slightly viscous suspension of, apparently, cellulose molecules, cellulose ions and celluose aggregates. Since, except under special conditions, this solution shows slight tendency to set to a jelly, it would seem as if the aggregates which break off from the fiber and which are formed by the collision of the particles in suspension, due to interior osmotic pressure on the surface membrane, soon expand to the limit of the cohesive resistance and again disintegrate. On increasing the temperature, this cohesive force would be weakened, and this would explain the marked change in slowness of pulp with change of temperature.

Experiment of Interest

The effect of alum on a fiber which brings about a hardening and prevents disintegration while the surface layer is being hydrolyzed to the formation of a dextrin by excessive abrasion, as is done in the making of a greaseproof wood fiber paper, would be partially the result of the addition of a trivalent salt in lowering the ionization and swelling of the fiber so the destruction does not penetrate so deeply, partially the effect of the acidity of this salt and there is one further possibility which will be referred to later. The marked increase of hydration which occurs so quickly after the cutting of the fibers in the jordan is probably due to the exposure of the more sensitive, perhaps more porous or less polymerized, inner layer of the fiber. It would be of interest to carry out experiments designed to show as to whether there is any effect on the swelling or viscosity of a pulp suspension by the addition of neutral salts like NaCl, Na_2SO_4, $CaSo_4$.

The relation of cellulose in an acid solution to the Donnan membrane equilibrium is not so clear as is that of an alkaline solution. Loeb says that it is possible that the difference in the behavior of colloids in alkaline solution and in acid solution is accompanied by an intramolecular change in the colloid molecule, the ions in the two cases being isomers of each other, similar to the condition with indicators. Cellulose in an acid solution seems to have lost considerable of the atomic cohesive force exhibited when in an alkaline solution, evidenced by the fact of the contraction instead of swelling with very small amounts of acid, and by the rapid disintegration of fiber structure by even traces of acids in close contact with fibers as in finished papers. With larger amounts of acids, as in acid parchmentizing, an entirely different condition must result. Certainly, the partially dextrinized cellulose found as in the residue from the evaporation of white water, loses its adhesiveness to glass when acid is added in comparatively small concentration, which would be in keeping with the effect of the Donnan membrane.

Qualitative Tests Made

A number of qualitative tests were made to determine the effects of different salts on the cellulose prepared to have different hydrogen ion concentration as described above. In each case the fibers were immersed in the solution of the salt for an hour or more and the relative retention of one or the other ion tested in some suitable manner. Tests were made with such salts as silver nitrate, copper sulphate, potassium chromate, potassium ferrocyanide, ferric sulphate and aluminium sulphate. In such work there are a number of disturbing conditions which have to be controlled with great care such as the variation of the ionization of the cellulose by the hydrogen ion concentration of the salt added, the possibility of holding the salt in complete solution at the desired hydrogen ion concentration, etc. The work done to date has not been sufficient for drawing definite conclusions, but it would seem as if,

1. Acid ions are with difficulty, if at all, retained by fibers, indicating that cellulose does not function to any appreciable extent as a positive ion.
2. Basic ions show a better retention by fibers of low hydrogen ion concentration than when the hydrogen ion concentration is high.
3. Salts of trivalent ions which hydrolyze in dilute solution show a high retention of the positive ions of the salt by *all* fibers tested, but especially by those of low hydrogen ion concentration.

Tests with Ferric Sulphite

This last point was very clearly demonstrated by the tests made with ferric sulphate. A concentrated freshly filtered, clear solution of ferric sulphate of PH 1 was so well retained by all the fibers as to stain them a deep brown. On adding KCNS and HCl and washing off the deep red liquor by decantation, the alkaline fibers were seen to have retained their blood red color whereas those on the acid side were white. About the highest PH that could be obtained with a clear solution of ferric sulphate was 2.5 and in this solution the iron is only sufficiently concentrated to give a pale red color with KCNS and HCl. When such a solution is added to the cellulose series mentioned above, the fibers quickly and markedly extracted the iron until the color obtained by subsequently adding KCNS and HCl was decidedly deeper than that of the original solution. It looked as if the alkaline treatment had distended the fibers so treated, making it possible for the positive ferric ions to penetrate within the fiber. In all probability the subsequent acid treatment contracted the pores of the surface membrane confining the ferric ions within the structure. A very interesting point was the change of shade of color of the iron solution after the fibers had been suspended in it for some time to the reddish, turbid appearance of precipitated ferric hydroxide. Yet it would not seem possible to explain any precipitation of iron hydroxide within the membrane since, according to Loeb's theory, the concentration of hydroxyl ions within the membrane was less than without.

Loeb found a similar anomalous behavior of proteins at the isoelectric point and trivalent ions and suggested the possibility of a loose combination resulting in the formaton of complex and positively charged ions and he says that these salts are less stable than the salts due to colloid ionization. Hibbert's formula for cellulose postulates two oxygen atoms, each between two carbons, leaving ample opportunity for a secondary valence bond between these oxygen atoms and the trivalent iron and this suggestion was made to the author by Professor Hibbert.

In this connection Herzberg[3] has recently reported a study of the effect of different writing inks and of the separate effects of the constituents of writing inks on the destruction of papers with age, and he found that iron salts or inks containing an appreciable amount of iron salts were the only ones of those tested which had any marked effect on the destruction of the paper with age.

What These Experiments Indicate

These qualitative experiments with iron salts would seem to indicate that in the case of iron salts we are dealing with a reaction which is not included in Loeb's theory of colloidal behavior, since that theory does not postulate a reaction between the positively charged colloidal ions and the positive ferric ions, as was observed.

Nor would it explain the inability of HCl to dissolve the iron out of the celluose which had previously been distended by the alkaline treatment. The more possible explanation is that in the alkaline solution the Donnan membrane caused a swelling which gave to the electrolyte ions in the solution a better opportunity for penetration than in the case of the acid treated fibers, but the precipitation of the iron within the fiber must have occurred through selective absorption, due to the play of secondary valence affinities, very probably at the point suggested above.

Due to the absence of colored salts of alum, it is difficult to make similar experiments with alum, but the similarity of the two compounds in many reactions would suggest a similarity in this case.

Tingle[4] has recorded experiments intended to show that in papermaking the alumina of the alum is not adsorbed by cellulose, but it is questionable as to whether his experiments did reproduce mill conditions.

[3] PAPER TRADE JOURNAL for March 8, 1923.
[4] *Journal of Industrial and Engineering Chemistry*, 14, 198 (1922).

In the sizing of paper it is essential that the alum and rosin be added to the beater and thoroughly mixed under high concentration of the fibers and that the paper be run on the machine as soon as possible after dilution. Alum added to the diluted stock in the chest is almost worthless in increasing sizing. The adsorption force, according to Langmuir, functions only over a distance equal to the thickness of one molecule and therefore, in a dilute solution, the solution force and the scarcity of impacts would prevent any marked adsorption, which is just what Tingle found.

There is also one other condition of mill practice which Tingle failed to reproduce. In the decolorization of natural waters by alum precipitation, the requirement is that the original water be alkaline and that there be added sufficient alum to decrease the PH to 6 or less. As the alum passes through the PH of 7 to 5, it will form flocks whose coarseness depends largely on the concentration of the alumina and on these flocks will be adsorbed all the iron and organic matter of the water leaving the supernatant water as clear as crystal. These flocks will not be again dissolved at any acidity obtainable with alum. A similar condition must prevail in the beater. The pulp is in a distinctly alkaline liquor, due to the alkalinity of the size solution, and alum is added until the PH decreases to about 4 for good size retention. A slight deficiency of alum below this point will cause a decided drop in the sizing effect. In Tingle's experiments this change of alkalinity was not reproduced.

A Further Statement by Tingle

Tingle makes the further statement that the retention of alum found in one case was due to the lime salts remaining in the fibers. This is difficult to understand in view of the fact that lime salts have an extremely detrimental effect on size or alum retention. It is usually considered impossible to size with hard waters. The only probable relation would be a replacement but in the acidity of his solution, there seems little possibility of an ion penetration of the fibers.

The adsorption of alum and of rosin size by fibers can be easily followed under the microscope. If a bunch of fibers is stirred with a needle into a drop of fairly strong alum on a microscope slide and a cover glass is dropped on but not pressed and the slide is kept in a horizental position for a few hours, there will be ample evidence that the small alumina particles tend to arrange themselves on both sides of the fiber walls. If, after the alum, rosin size milk which has been freshly filtered through paper and Herzberg stain are added to the fibers on the slide, the adsorption is more easily seen. But if the size and alum are coarsely precipitated before mixing with the fibers, then the apparent adsorption is much decreased, no doubt due to the immobility of the larger particles.

Sizing Experiments by Sieber

In the case of the sizing of paper, we have the addition of alum, an acid salt, to a suspension of two different negative colloids, cellulose and rosin. Therefore, in order to understand sizing, we must know the exact relation of each of these colloids to the alum and to each other in the presence of the alum. During the year 1921 there appeared in Zellstoff und Papier, later translated and published in *Paper Trade Journal*, a series of articles by Dr. Rudolph Sieber[5] of Kramsfor, in which are recorded some very interesting experiments with reference to sizing. Without going into his experimental evidence, the points which he has established may be summarized as follows:

When alum is slowly added to an alcoholic solution of pure rosin, there is complete precipitation at a concentration of 0.082 millimols of alum per liter, then no precipitation at a slightly higher concentration and again precipitation at a concentration of 0.6 millimols. This would be entirely in keeping with a Donnan membrane effect on a true colloid, the first precipitating zone being the isoelectric point, the second being the point where the osmotic pressure overcomes the cohesive molecular forces. It also shows why, in the upper zone, the precipitate contains a measurable amount of aluminium hydroxide and only a trace of sulphate. It requires only a trace of the sulphate to satisfy the ionization requirement. This theory is also in keeping with Sieber's statement that the precipitation in the lower zone is due to the positive ions and in the upper zone to the negative ions. Under mill conditions, where other disturbing electrolytes are present, the upper zone would undoubtedly occur before so much alum had been added.

Seiber's next point of value is also a confirmation of Loeb's calculations of the results of a Donnan membrane condition since it shows that the power of different electrolytes to cause the precipitation of rosin solution in proportion to the valence of the positive ions. Later Sieber states that aluminium sulphate salts have a lower limit for the upper zone than have the chloride salts which is again according to the valence rule since here he was on the other side of the isoelectric point. Sieber found, when he added rosin size to pulps of different kinds, that in every case there was a definite adsorption of the size by the fibers in the complete absence of alum but this adsorption differed for the different kinds of pulps tested and there is no relation between the amounts taken up and the ash of the fibers. This point will need further investigation for at present nothing is definitely known as to the effect of salts as impurities in the fibers.

With reference to the experiments performed by Sieber of adding alum to rosin size. Sieber remarks that "The complete precipitation of a sizing solution with up to 45 per cent of free rosin always occurred completely and instantaneously when as much alum was added as was needed for the neutralization of the resinate present." This would probably bring the hydrogen ion concentration down to that of the isoelectric point of the solution at which point flocculation always occurs easily, no doubt upon the precipitated alumina.

Assuming that aluminium resinate was formed in this case, this could be adsorbed by the secondary valence play between the positive aluminium and negative oxygen of the cellulose. The function of the excess alum and of the free rosin which under no condition could react since alumina ions will not exchange a strong negative ion for a weaker one, and which may be largely entangled in the mass, would be to repress the ionization of the aluminium resinate which would naturally occur at this dilution, thus holding the whole mass in contact with the fiber. Such an arrangement would not give any sizing and, being loosely held, would be very susceptible to being disturbed by dilution or stirring and this conforms to mill experience. Paper taken from a machine before it reaches the hot dryer and air dried usually shows a very low sizing effect as compared with that of samples taken after the paper has passed over the hot driers. Also, if the relative amount of alum is insufficient, the sizing effect is not increased by the hot drier condition which would mean that the aluminium resinate hydrolyzed in solution allowing a considerable portion of the rosin to get away from the proximity of the fiber meaning either a retention in masses without sizing effect or a loss in back water. These masses of aluminium resinate and free rosin would be well distributed against the fibers because of the affinity between the cellulose and the alumina. When moist heat was applied as on the machine drier, the aluminium resinate would be hydrolyzed and, the temperature of the drier being sufficient to melt the rosin, the particles of free rosin would coalesce to form a durable, waterproof film at least over the ends of the capillaries which is called the sizing effect. If the amount of size used was insufficient, or the paper unusually thin, the tension on this thin film would tend to form small holes on its surface which would increase markedly the penetration of the paper by water or by ink.

Conclusion

In conclusion, it would seem as if the Donnan membrane equilibrium theory, as explained by Loeb, could be proven to be the cause

[5] *Zellstoff und Papier*, 1921 and 1922; PAPER TRADE JOURNAL for October 12, 19, 26; November 16, 1922.

of the swelling of fibers in an alkaline solution and of the viscosity and at least partially, the electrical charge of the solution.

The relation of the Donnan membrane theory on the effect of acids on cellulose will need further study.

It is possible that swelling does occur for a very slight range below the isoelectric point. At present there seems little evidence for the existence of a Donnan membrane when the pulp is in an acid solution.

The reactions of sizing seem to be entirely independent of the Donnan membrane equilibrium except in as far as the hydration or swelling favors the reaction.

The work of Sieber would seem to indicate that the reactions between rosin and alum were in accordance to the Donnan membrane theory.

The theory for the mechanism of the sizing reaction suggested agrees with the present known theories and mill experience and might be a satisfactory working hypothesis until further evidence on the subject has been gathered.

CURRENT PAPER TRADE LITERATURE

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

Process for the Production of Dense, Hard Paper. C. G. Schwalbe. Ger. patent 366,322. *Papierfabr.* 21, 13 (Jan. 7, 1923). Additional density and strength, together with improved sizing, are obtained by adding "protective colloids," as plant mucilage, glue, casein, etc., to collodial plant mucilage mentioned in Ger. patent 303,498 for the production of dense, hard paper.—J. L. P.

Production of Transparent Paper for Window Envelopes, Etc. George Bergmann. Ger. patent 366,811. *Papierfabr.* 21, 69-70 (Feb. 4, 1923). Transparent paper is made directly on the paper machine. The process requires two longitudinal wire machines.—J. L. P.

Production of White or Variegated Shaded Paper or Board. Ringe & Co., Ger. patent 367,868. *Papierfabr.* 21, 71 (Feb. 4, 1923). Glue or starch products are used in the process as binding materials after being subjected to a very intimate mixing.—J. L. P.

Production of Color Mixtures Containing Oils, Fats, or Waxes in an Unsaponified Condition for the Manufacture of Marbled or Glazed Paper and the Like. Ringe & Co. Ger. patent 367,805. *Papierfabr.* 21, 71 (Feb. 4, 1923). The color mixture containing oils, fats, or waxes and a color is subjected to a very intimate mixture process.—J. L. P.

Wrapping Paper As Used for the Shipping of Furniture. Edward Dahill, Jr. PAPER TRADE J. 76, No. 7, 51-52 (Feb. 15, 1923). A discussion of the tentative specification being put out by the Freight Container Bureau for paper used for wrapping both crated and uncrated chairs. Rope stock, 100 per cent kraft, and 100 per cent sulphite are the most used, their quality being in the order named. All rope paper is not extensively used because of its cost and the smallness of the supply; but the addition of some rope stock to any paper is very desirable as it increases the strength, flexibility, tearing resistance, and toughness of the paper. Kraft is preferable to sulphite and is rapidly displacing it—A. P-C.

Production of Dense, Strong Paper. Carl G. Schwalbe. Ger. patent 368,189; addition to 303,498. *Papierfabr.* 21, 82 (Feb. 11, 1923.) The moist sheet, containing pulp mucilage, is subjected to a high pressure and dried at a moderate temperature.—J. L. P.

Production of Dense, Strong Paper. Carl G. Schwalbe. Ger. patent 368,190; addition to 303,498. *Papierfabr.* 21, 82 (Feb. 11, 1923). The waste material is treated with acids or acidic substances at the same time that it is being mechanically worked, as in a kollergang.—J. L. P.

Paper with a Foam-Like Effect. Farbwerke v. Meister Lucius & Bruning. Ger. patent 368,258 *Papierfabr.* 21, 83, (Feb. 11, 1923). To produce this effect a water-soluble, amorphous, condensed sulphur-containing compound of an aromatic nature is used.—J. L. P.

Paper for Intaglio Printing. Willy Gruenewald. *Papier-Ztg; Paper,* 31, No. 15, 7-8, 10 (Jan. 31, 1923). The qualities required of paper for intaglio printing are: absorbency (not excessive) combined with a certain firmness and stiffness, but no rattle. The methods of obtaining these properties with various qualities of paper are briefly described.—O. P.-C.

Wood Fiber Yarns and Fabrics. R. W. Sindall. *J. Textile Inst.* 13, 133-139 (1922); *Chem. Abs.* 16, 4353 (Dec. 10, 1922). The cutting off of jute importations to Germany and Austria during the war resulted in the opening of more than 500 paper yarn factories by the end of 1917. Short accounts are given of the different inventions for converting wood to wood pulp and the latter to yarns. The effect of spinning ón strength and elongation is shown by the following figures: plain dry pulp strips, breaking length 4,170 m., elongation 2.84 per cent; rolled cylindrically 5,180 m., and 2.71 per cent; rolled and twisted 6,410 m. and 3.06 per cent. In general finished fabrics from wood pulp have about half the strength of jute fabrics of the same make and weight. During the past few years the activities of the manufacturers have been devoted to the improvement of the yarn in the direction of durability, water-resistant properties and tensile strength by the treatment of the pulp or yarn with various chemicals before spinning or twisting. Tannin fixed with gelatin increased the tensile strength about 25 per cent and when fixed with aluminum acetate the increase was 44 per cent.—A. P.-C.

Coated Papers. *Papierfabr.* 20, 479-483 (1922); PAPER TRADE J. 75, No. 8, 45-58 (Aug. 24, 1922). Brief description of the manufacture of chromo, stained, metal-coated and velours papers, of the preparation of the pulp used for these grades of paper, and of the characteristics of the machine for transforming them into paper.—A. P.-C.

Process for the Production of Transparent and Fadeless Japanese Rice Paper. Carl Schumann. Ger. patent 366,505. *Papierfabr.* 21, 46 (Jan. 21, 1923). Rice paper is treated with a mixture of dilute color paste containing glycerine, castor oil, gum arabic, and an aniline dye.—J. L. P.

Articules Produced from Pulp and Paper

Paper Cup and Method of an Apparatus for Making Same. G. J. Bohlman, assignor to American Water Supply Co. Can. patents 225,109 to 225,114, inclusive, Oct. 24, 1922.—A. P.-C.

Paper Cups and Vessels. R. Holman, assignor to Vortex Manufacturing Co. Can. patent 225,207, Oct. 24, 1922.—A. P.-C.

Paper Towels. A. Ek, assignor to Brown Co. Can. patent 226,092, Nov. 14, 1922. The towels are made from sulphate pulp which is digested in such a way as to leave a small quantity of saponified resin in the interstices of the paper.—A. P.-C.

Standardization

Tentative Report on Paper Standardization. PAPER TRADE J. 75, 75, No. 11, 38, 40, 42 (Sept. 14, 1922). Text of the tentative report submitted by the technical committee appointed by the U. S. Bureau of Standards, covering specifications of quality, testing of paper, sampling of paper for test, and tolerances.—A. P.-C.

Report on Simplification of Page Sizes. PAPER TRADE J. 75, No. 19, 36, 38, 40, 42 (Nov. 9, 1922). Text of the report of the committee appointed by the U. S. Bureau of Standards.—A. P.-C.

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Machinery

A Continuous Specific Gravity Recorder. P. W. Codwise, PAPER TRADE J. 75, No. 20, 54-56 (Nov. 16, 1922). The author describes a new type of continuous recording instrument (invented by S. D. Wells) designed to record the specific gravity of liquids, which operates on the principle of weighing a constant volume of the solution and recording this relative weight as a continuous operation. A detailed survey has been made of the application of this machine to the specific problem of giving accurate records of the Beaumé test of the tub sizing solution used in the manufacture of fine papers. The various difficulties encountered and the methods of overcoming them have been detailed. It is concluded that this instrument is a valuable contribution to the scientific control of many manufacturing processes and of distinct interest to those concerned with the management of the same.—A. P.-C.

Digesters

A New Device for Feeding Chips to the Digester. K. Westad. *Papir-Journalen*, 10, 6 (April 29, 1922). The device is designed to prevent choking of the conveyor when the chips do not fall into the digester. A system of steam pipes is installed, whereby steam is blown through the chips, expelling the air and causing a steady stream of chips to pour into the digester, and in half the time which otherwise would be necessary. The device works automatically, supplying 4 per cent to 6 per cent more chips to the digester, increasing its capacity and quantity of pulp per cook. —P. B.

Electric Drives

Electrical Sectional Drive for Paper Machines. W. Stiel. *Wochbl. Papierfabr.* 54, 391-395 (Feb. 10, 1923). The first part of the article is concerned with a general discussion of the subject; the latter part contains working plans for poly-motor drive with compounded d. c. motors, with synchronous motors, and with d. c. motors and synchronous auxiliary motors.—J. L. P.

Electric Sectional Drive for Paper Machines. W. Stiel. *Wochbl. Papierfabr.* 54, 532-535 (Feb. 24, 1923). A discussion of poly-motor drive with d. c. motors and speed maintenance by automatic regulating devices both in a mechanical and an electrical way.—J. L. P.

Kollergangs in the Service of the Paper Industry. Ernst Blau. *Papierfabr.* 21, 63-65 (Feb. 4, 1923). A general article on the kollergang with especial reference to the application of electric power.—J. L. P.

Barkers

Bark Removing Machine. H. L. Crouse and C. M. Johnson. U. S. A. patent 1,438,904 Dec. 12, 1922. Some of the features of the barker are the arrangement of parts for simultaneously moving both the cutter and the log rest toward or from the feeding means, according to the size of the logs, by means of a single hand control; novel means for carrying and vertically adjusting the cutter head, providing a unique type of rotatable gauge, for controlling the length of the cut; novel mounting of the log feeding wheels; and variable speed friction drive for these wheels. —A. P.-C.

Wires

Wire Machine for the Production of Hand-Made Paper with Watermark. Paul Erkens. Ger. patent 366,810. *Papierfabr.* 21, 68-69 (Feb. 4, 1923). A cylindrical device is attached to and above the shaking end of an ordinary longitudinal wire machine. This device takes up the paper stock, removes the water and couches the resulting sheet on the wire. The cylinder also may be embossed with a design for a watermark.—J. L. P.

Watermarking Finished Paper. Oswald Koch. Ger. patent 367,925. *Papierfabr.* 21, 83-84 (Feb. 11, 1923). The watermarking design is attached to a revolving cylinder over which the paper is passed.—J. L. P.

Wire Savings by the Use of Ball Bearings. John Kepke, Jr. *Paper Trade J.* 75, No. 2, 53 (July 13, 1922). A discussion of the substantial economy in wire obtained by the use of ball bearings, which is illustrated by the fact that two somewhat similar high speed machines in the same mill, one equipped with ball bearings and the other with plain bearings, were found to have average wire life of about 25 days and 12 days respectively.—A. P.-C.

Device for Quickly Changing Wires. P. Priem. Can. patent 225,323, Oct. 31, 1922. The patent covers devices for rapidly moving out laterally the breast and table rolls and suction boxes.—A. P.-C.

Paper Machine Shake. J. Rose assignor to C. H. Schmeil. Can. patent 225,537, Oct. 31, 1922. The shake rails are divided into two or more sections, each one of which is shaken, the amplitude of the shake of each section being adjusted independently according to requirements.—A. P.-C.

Screens

Cylindrical Screen. Carl Kurtz-Hähnle. Ger. patent 361,476, addition to Ger. patent 350,001. *Wochbl. Papierfabr.* 54, 397 (Feb. 10, 1923). The screen used for covering the removable sections of the cylinder is fastened on the inside of the cylinder.—J. L. P.

Screening and Refining Paper Stock. A. J. Haug, assignor to Sherbrooke Machinery Co. Can. patent 225,978, Nov. 14, 1922. The stock is first put through a knotter (U. S. A. patents 1,183,297 and 1,183,298 of May 5, 1916). The good stock is put through a riffler (Can. patent 220,545, A. J. Haug, *Pulp & Paper* 20, 791, Sept. 14, 1922; *Paper Trade J.* 75, No. 12, 51, Sept. 9, 1922), (not necessary with groundwood), then through a centrifugal screen (U. S. A. patents 1,147,239 and 1,172,239). The good stock is passed through a second riffler and then constitutes the highest grade of stock. The tailings from the centrifugal are delivered to a tailing screen (U. S. A. patent 1,248,668), the good stock being either sent to a riffler and then constituting a second grade stock, or being returned to the system at any suitable point. The rejections from the tailing screen are sent to a refiner (Can. patent 212,209, A. J. Haug, *Pulp and Paper* 20, 1027, Nov. 23, 1922; *Paper Trade J.* 74, No. 18, 57, May 4, 1922) which converts them practically all into good fiber.—A. P.-C.

Rotary Screen. J. Paramor, assignor to Watford Engineering Works, Ltd. Can. patent 225,398, Oct. 31, 1922. Fr. patent 544,664, June 30, 1922. The patent covers means for slowly rotating the drum (either inward- or outward-flow) and giving it a rapid vibratory motion, the two motions being independent and separately adjustable.—A. P.-C.

Bull Screen. J. G. Delage. Can. patent No. 226,658, Nov. 28, 1922. The pulp from the grinders flows onto a grating which stops the larger pieces which are suitably removed. The scraper arms of the bull screen have spray nozzles attached to them, so that water is sprayed on to the screen as the arm passes into it but the water is shut off as soon as the arm passes the screen. The outlet pipe from the vat under the screen is equipped with a rectangular valve operated by a float riding on the stock in the vat to prevent the latter from rising sufficiently to flood the screen—A. P.-C.

Pulp Thickener. A. J. Haug, assignor to Sherbrooke Machinery Co. Can. patent 225,977, Nov. 14, 1922. Pulp of practically any consistency is fed to the upper surface of a perforated metal cylinder (Haug, Can. patent 209,992, March 29, 1921; *Pulp & Paper* 19, 1101, 1921) and suitably pressed by means of a smooth-surfaced pressure roll. The water passes through the perforated roll and can be reused, while the pulp adheres to the pressure roll from which it is removed by a doctor blade.—A. P.-C.

Cellulose

Determination of Cellulose in Plant Material According to the Method of Cross and Bevan. Rudolf Sieber. *Zellstoff u. Papier* 3, 27-29 (Feb., 1923). In the procedure for the determination of cellulose according to Cross and Bevan there is uncertainty

in recognizing the end-point of the reaction, consequently the cellulose may be attacked. A method is described whereby the reaction is interrupted, yielding an unattacked cellulose. The chlorination apparatus consists of a wide glass ring over the bottom of which is drawn and tied a linen cloth filter. It is of such a size to fit a 6 cm. buchner funnel. A rubber ring is inserted between the funnel and the bottom edge of the glass container to secure good suction. The wood meal, 3 to 4 g., is placed in the above glass apparatus and heated in a beaker containing water to thoroughly moisten the sample; after cooling, the water is sucked off, and a saturated solution of chlorine water added. With the disappearance of the chlorine odor, in 5 to 10 min., the liquid is sucked off to remove the hydro-chloric acid formed and washed once. The treatment is repeated until the residue is nearly free from lignin, as determined by previous test. After washing, the residue is accorded the usual treatment with sodium sulphite solution, first for 30 min., then for 20 min., washed, transferred to a gooch crucible, dried and weighed. In an actual test the total chlorination time was 30 min. and 200 cc. chlorine water were used. The corrected copper number of the isolated cellulose was never above 1.5 and there was no evidence of oxycellulose. This residue can be further investigated, by known methods, for its content in other substances, lignin and pentosans.—J. L. P.

Preliminary Treatment of Cellulosic Raw Material for the Production of Cellulose. Erik L. Rinman. Ger. patent 366,701. *Papierfabr.* 21, 58 (Jan. 28, 1923).—The raw material, before treatment with cooking liquor, is soaked in warm water or warm dilute waste liquor at 80° to 90° C. The liquid is removed before the cooking liquid is added; an increased yield is claimed.—J. L. P.

Process for Recovering Non-Cellulose Material in Waste Liquor. A. R. DeVains. Fr. patent 547,898. The organic matter is precipitated from the liquor by treatment with a halogen or with an acid. The precipitate is removed by filtration, and is either incinerated, subjected to destructive distillation, or gasified in a gas producer.—A. P.-C.

New Methods for the Disintegration and Refining of Plant Fibers. P. Waentig. *Wochbl. Papierfabr.* 54, 23-25 (Jan. 6, 1923). *Papierfabr.* 21, 49 (Jan. 28, 1923).—A review of war-time and post-war developments in the sulphite and soda cooking processes, with brief statements in many cases as to their merits. Mention is made of the utilization of hemp, straw, and reeds for the manufacture of paper. Chlorine water and chlorine hydrate are less destructive in their action on fibers than chlorine, as in the Cataldi process. The use of carbon dioxide in a recently developed combined acid-alkaline bleaching process is briefly discussed.—J. L. P.

Apparatus and Mechanical Pulp

The Breaking of Wood Grinding Stones. *Paper Ind.* 4, 1659-1660 (March, 1923).—An outline of the various causes of breaking of grinder stones, more particularly at the corners, and of the methods of avoiding these breaks.—A. P.-C.

Grinding Stone for Wood Grinder. Gottlieb Hohmann. Ger. patent 358,568. *Wochbl. Papierfabr.* 54, 171 (Jan. 20, 1923).—J. L. P.

Handling of Distinctive Papers

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 6, 1923.—A special investigating committee composed of a representative of the Treasury, the Bureau of Engraving and Printing, and the Bureau of Efficiency has been appointed to look into the handling of the distinctive paper used by the Bureau for the manufacture of currency and securities. The system of paper accounting has been declared antiquated.

A reported shortage of $93,000 worth of bonds or partially manufactured bonds has been causing some anxiety at the Bureau. Fred Geisler, superintendent of the Surface Division of the Bureau, has been suspended as a disciplinary measure.

"Ethics of Capitalism"

The "Ethics of Capitalism," by Judson G. Rosebush, has just been issued by the Association Press, 347 Madison avenue, New York. This is a discussion of the central issues in the industrial problem from the point of view of one who is at once a capitalist and a trained sociological student. Mr. Rosebush offers clear-cut convictions on many of the critical questions involved and appeals steadily to experience as the proof of his contentions. His analyses are fresh and striking. The book cannot fail to be of the greatest interest to those of every point of view on these much discussed questions. A leading merit of this presentation is the consistency of the author's position. It is plain that the author regards the questions insolvable apart from the application of truly human principles.

The chapter headings are as follows: The Partners to Industry, Industrial Democracy, Distribution of the Social Product, A Productivity Theory of Taxation, I Turn Farmer, The Foundations of Permanent Peace, The Newer Ethics of Capitalism.

In order that the reader may understand Mr. Rosebush's reactions to the labor problems that he writes about, he gives a personal word in the introduction. He was born in the village of Alfred, New York, went to college there, and later took graduate work in economics at Cornell University, the University of Pennsylvania, and the University of Wisconsin. Early in his business career, he became interested in paper manufacturing and it has held his major attention since. Among his other interests are banking, farming, and cattle raising. He is Superintendent of the Methodist Sunday School in Appleton, Wis., and is a member of the International Committee, Y. M. C. A.

Paper men particularly will be interested in this work as Mr. Rosebush is president of the Patten Paper Company and the Inland Empire Paper Company, vice-president of the Nekoosa-Edwards Paper Company and the Outagami Paper Company and treasurer and general manager of the Northern Paper Mills.

The price of the volume is $1.50.

Riordon Co.'s Position

MONTREAL, Que., June 4, 1923.—Commenting on the Riordon Company, of Montreal, the *Financial Post* says: "General opinion is that the prospects of putting the Riordon Company back into strong operating position are very good, but there will be little in the reorganization for the former preferred and common shareholders of both companies. Most of these have given up hope of getting any substantial benefit out of the reorganization and it is difficult to explain the recent flurry of strength in the Riordon stocks. The rights to subscribe for new stock in the new company that are likely to be given will have a value that is yet to be determined. It is stated that the 6 per cent bondholders will be well protected but that the holders of the 8 per cent bonds of the Riordon Company will get something in the nature of a second preferred stock. Ranking ahead of this, it is said, will be about $10,000,000, of first preferred stock which it is planned will be offered to present stockholders for subscription although the public as a general public also may be invited to come in. The company has sold a number of its timber limits, chiefly outlying hardwood properties that were not of particular value to a pulp and paper company and this has added considerably to the liquid resources of the company, all facilitating the progress of reorganization."

Du Pont's Announce New Dye

E. I. du Pont de Nemours & Co., of Wilmington, Del., announces the development of a new dye known as Pontamine Fast Blue 4 GL, which is a direct color of a greenish shade and great purity of tone. On paper it is faster to light than most of the direct blues.

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(Continued from Last Week)

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Suction

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(To be continued)

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

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THE AMERICAN PAPER AND PULP ASSOCIATION

Conducted by THOS. J. BURKE, C.A., Sec-Treas

MODERN DEVELOPMENTS OF STANDARD COST ACCOUNTING*

By G. Charter Harrison, The G. Charter Harrison Associates, New York

You remember the parable of the talent? Well, the talent was quite a sum of money; in fact, the value of a gold talent, according to authorities, was the equivalent of 7,200 pounds sterling or say thirty thousand dollars, and the gentleman in the parable who buried his talent in the ground and by this means tiedup this large amount of capital was requested to hand it over to a more progressive business man who had trebled his own investment.

It is the business man who makes the largest profits who is the greatest benefactor to the community at large. No one could grudge Henry Ford the large profits he makes when he considers how much Ford has added to the prosperity and enjoyment of the multitude. Whatever the motives prompting the business man in his striving for profits, the chances are very much that in enriching himself he will be enriching the world in general. That this is so was appreciated by an old time economist, Bishop Whately, who once made this statement—"It is curious to observe how through the wise and beneficent arrangement of Providence, men thus do the greatest service to the public when they are thinking of nothing but their own gain."

The Mainspring of Business

Profits are the mainspring of a business. If a business does not make profits it ultimately runs down to a point where the only kind of winding up which can be done is the kind which a receiver does!

Business enterprises being conducted with the primary purpose of making profits, it follows therefore that we must appraise all business instruments from the standpoint of the extent to which they contribute directly or indirectly to the making or safeguarding of profits and this applies to the cost system as well as everything else.

Now, of course, any cost system that is worth anything at all contributes in some measure to the making of profits, though it will be found that the cost of operating some cost systems outweighs many times the benefits derived from them.

Cost accountants are more than anxious to make their cost systems of the greatest value as profit makers but very very often only have the vaguest idea as to how to proceed to realize this result.

The accounting profession is largely to blame for this state of affairs. One would imagine from reading some works on cost accounting that a cost system was an end rather than a means, and it is only rarely that the cost system is considered from the angle of profit making except incidentally, whereas, it should be obvious that the sole and only justification for any cost system is whether it helps the profit and loss statement.

Three Primray Benefits

Now I want to enlarge on this point a little and I am going to quote to you from a statement of a writer who is regarded as an authority on cost accounting to demonstrate how far off even well regarded cost experts are as regards the real functions of a cost system. According to this writer there are three primary benefits to be derived from the operation of an adequate cost system. He only mentions these three so I assume that any other benefits are regarded by him as being subsidiary and of minor importance. These three primary benefits are stated to be the following:

1. The establishment of correct selling prices which eliminate the uncertainty of whether the product is sold at a profit or loss.
2. The concentration of salesmen on sales of more profitable articles.
3. The concentration of manufacturers upon the more profitable articles.

Of course, one of the primary objects of any cost system should be to give exact information as to costs so that we can determine what the margin of profit, if any, may be on individual articles, but the suggestion which is implied by the emphasis of the other two alleged benefits—that the real secret of success lies along the line of taking the profitable business and leaving the unprofitable business to competitors—I claim to be grossly incorrect. In any event, outside of highly restricted limits, the policy is impracticable and if it were universally adopted business would degenerate into a mere cream skimming contest.

To suggest that the road to prosperity lies primarily in concentrating sales and manufactures on abnormally profitable articles is merely to offer a temporary and superficial remedy for a deep seated trouble. Instead of calling for the solution of the basic problem as to why certain articles are unprofitable, it recommends what may appear on the surface to be a quick and easy path to prosperity. Obviously, however, if all manufacturers adopted this policy the competition for the business in the abnormally profitable lines would soon reduce the profit on these to a point where they were no longer especially remunerative.

*Address delivered before the Connecticut Valley Local Division of the Cost Association of the Paper Industry, at Strathmore Inn, Woronoco, Mass., May 15, 1923, by Ralph E. Case.

Adverse Ecouomic Conditions

Sometimes, of course, due to adverse economic conditions, a manufacturer is so placed that he cannot successfully compete in certain lines. In the long run, however, it must be obvious that no important item of product can consistently be sold at a price which will not net the most efficient and well placed manufacturer a good return upon his investment, and in the majority of cases it will be found that the reason for an article not being sold on a profitable basis is either inefficient selling, manufacturing, or both.

I call to mind an instance where the cost records of a client of ours showed that a certain article was being sold at a substantial loss. An investigation disclosed the fact that the price at which this article was sold was ample to provide an excellent profit, but owing to inadequate sales facilities the sales of this particular article were not sufficiently large to keep the department in which it was manufactured operating at more than fifty per cent capacity with the result that more than the legitimate margin of profit was absorbed in the cost of the idle facilities. If the problem had been viewed from the restricted standpoint of the quotation I have given you, the article in question would have been withdrawn from the line and the avenue closed to what subsequently proved to be a very handsome source of income to that company.

Having determined from our cost records that certain lines of product are relatively unprofitable, the logical first step to take is to determine to what extent the lack of profits is due to causes within the control of the manufacturer. In some cases it will be found that due to various causes over which the manufacturer has little if any control, certain lines of product are not very remunerative even when efficient selling and manufacturing methods are in force, but often such lines must be retained as feeders for the more profitable lines. Unless, however, an unusual lack of foresight has been displayed in embarking upon an inevitably hopeless venture, it will generally be found that the elimination of preventible inefficiencies will result in the earning of satisfactory profits.

Prime Value of a Cost System

The prime value of a cost system considered from the standpoint of aiding in the making of profits is in pointing out to the manufacturer where the profits which he should but does not make are going to. If the accountant tells him that the cashier is appropriating $100 a week from the cash box it does not take the manufacturer long to stop that particular leak, and if the cost accountant carries this principle further and shows him that he is losing several times that amount owing to preventible inefficiencies in the factory, one may rest assured that steps will be taken to repair this leak also.

The reason generally why inefficiencies are not corrected is that their existence is not known. The farmer is very much alive to the relatively trifling amount of grain he loses owing to holes in his sacks and very promptly has these repaired, but as he does not realize the far greater loss he is incurring due to the fact that his fields only produce sixty per cent. of what they would if he were practicing more efficient methods of cultivation, this serious drain on his profits is allowed to run.

In order to enable the farmer to determine his loss due to inefficient methods of cultivation he requires two items of information. First, his actual production of grain per acre and, second, the possible or standard production per acre. In the same way for the manufacturer to determine to what extent his costs are excessive, it is necessary for him to know both his actual and his standard costs and a comparison of the two will tell him how much profits he has lost owing to failure to realize standards.

How Cost Data Must Be Shown

It seems to me that it is a self-evident truth that cost data shown without relation to standards is of little value. Standards without cost records are as ineffective as firing at a target would be if the marksman had no means of determining whether he was making hits or not, and vice versa, cost records without standards would be equivalent to carefully recording the result of every shot but giving the marksman no definite mark at which to aim. With standards and no records we are in the position of a traveller with a time table and no watch, while conversely, with records without standards we are in the position he would be with a watch and no time table. Records without standards are a hammer without an anvil, a rifle without a cartridge.

All accounting systems which conform to established principles are what is known as double entry systems, but in a broad sense, any system of cost accounting which shows costs without relation to standards is single entry accounting—it leaves out one side of the ledger.

Mr. Harrison wrote a book in which he pointed out the glaring and serious defects of this kind of single entry cost accounting and a reviewer in the *Journal of Accountancy* pooh poohed his remarks about the failure of the accounting profession to make use of standards and stated that all accountants use standards more or less by making comparisons of current costs with the costs in previous periods. Now past results, gentlemen, are not standards. A comparison of this month's costs with those of last month means nothing unless you know the true significance of these last month's costs. Until you know how last month compared with a proper standard of attainment, just to know how this month compares with last month is information of very limited value. Agreed, of course, that the endeavor to beat a previous record is commendable and better than having no standard at all, but the procedure is vague and unsatisfactory compared with having a definite realizable standard.

The whole idea of standard costs is so much in line with modern industrial thought and methods that I do not think it is necessary for me to take more of your time in advancing further arguments as to the prime necessity of having some standard or ideal at which to aim and an accounting system to show to what extent our actual results have varied from standard. I will therefore devote the rest of my talk this evening to explaining how standard cost systems are used as a means of increasing profits and some of the principles underlying their design and operation.

Various Kinds of Standard Systems

Now there are standard cost systems and standard cost systems—some of them, it must be admitted, are distinctly crude and ineffective. The defects in most cases have been due to the fact that the accountant did not accept the standard cost idea so that the engineer went ahead without him, and being an engineer, I speak with a certain degree of authority when I say that one lifetime is too short for a man to be both a first-class accountant and a number-one engineer. The result in many cases has been chaos. Due to the engineer's lack of accounting technique the systems he has lined up have been defective both as regards results, accuracy and cost of operation.

Mere comparisons of actual and standard costs by operations will not get us very far but will probably cost us a lot of money. Consider for a moment, the inadequacy of this information in the kind of business with which we are most familiar where thousands of different articles are being made in the month and tens of thousand operations are being performed. Here we have schedules of cost comparisons with literally thousands of figures on them. We have called that kind of accounting Astigmatic Accounting (astigmatism, as you know, is a visual defect to an uneven surface of the eyeball, which renders it impossible for the individual to bring things to a focus). No cost system in any way approaches adequacy which will not bring information to a focus so that the executive can be given a bird's-eye view of the situation. The late John H. Patterson of cash register fame, would not look at a statement which had more than a few figures on it, and personally, I am in accord with his ideas in the matter.

It should be possible and is possible under a properly designed

cost system for the essential information relative to the cost system to be expressed on a postcard, and even then the figures do not have to be made unduly small.

The Heart of the Matter

Let us get to the heart of the matter and determine what is the kind of information which the executive needs in order to enable him to make money out of his cost system. George Horace Lorimer expressed the basic idea in this matter in his "Letters from A Self Made Merchant to His Son" when he said:

"In the first place you don't have to bother very much about the things which are going all right except to try and make them go a little better, but you want to spend your time smelling out the things that are going all wrong and laboring with them till you've persuaded them to lead a better life. For this reason one of the most important duties of your job is to keep track of anything that's out of the usual. If anything unusually good happens there's an unusually good man behind it, and he ought to be earmarked for promotion, and if anything unusually bad happens there's apt to be an unusually bad man behind that and he's a candidate for a job with another house."

Now what George Horace Lorimer is describing in the quotation I have just read you is the application in industrial life of the principle of exceptions, that is, the concentration of attention to the abnormal and unfavorable condition and the spending of no more time on the normal than is necessary to establish the fact that it is normal. If we desire to eliminate the shocking loss of time of industrial leaders due to the lack of focus in accounting statements with which they are furnished, it is necessary that the principle of exceptions be applied to cost accounting methods and this involves not only making comparisons of actual and standard costs but also the summarizing of these comparisons in such a manner as will bring the data to a focus so that the executive can immediately place his finger on those conditions which call for remedying.

A Semaphore Statement

Now under the methods which we employ the manufacturer gets what we call a "semaphore statement." This shows his total manufacturing costs for the month compared with the total standard costs of the month's production. An increase of actual over standard is written in red. This increase or decrease (it is generally a red figure naturally) is then analyzed by causes, some of the causes being the following:

Idle Time Expense due to Lack of Orders.
Idle Time Expense due to Operating Inefficiencies, Lack of Material, etc.
Variations in Labor Efficiency
Variations in Labor Rates
Variations in the Price of Raw Materials
Variations in the Price of Operating Supplies
Variations in the Efficiency of Use of Materials
Spoilt Work, etc. etc.

You will readily realize why we call this statement a semaphore because it obviously fills the same function for the executive that the railroad semaphore does for the engineer on the locomotive. In one case a red light indicates danger and in the other case a red figure indicates an unfavorable condition.

Supporting the summarized statement are detailed departmental efficiency statements which provide the executive with the fullest details of the inefficiencies disclosed in total on the summarized statement. The important feature to consider as regards these subsidiary statements is that they are not thrust on the executive until he wants them. All details are available when wanted but the plan is to give the executive his bird's eye view of the situation and if he wants a close-up picture he can have it. Otherwise he is in danger of not being able to see the forest because of the trees.

Knowing Where to Start

In my experience I have found that the average plant executive's greatest handicap in his efforts towards obtaining increased efficiency is in knowing where to start. The average cost system does not tell him this and he is just as likely to concentrate on some inefficiency representing a hundred dollars a month and overlook one representing ten times that amount as not. To disclose an inefficiency is the first step toward correcting it. I have never found a factory manager who would stand for seeing red figures on his efficiency statements without either remedying the situation or proving conclusively that the standards which were set up were too high and not attainable.

Another advantage of the plan I have been describing is that a hard and fast line is drawn between cost increases under the control of the factory superintendent and those which are the result of general conditions or of conditions beyond his control. Due to the impossibility of interpreting it correctly, the average cost statement has resulted in much injustice to operating men who have been called down for conditions which they were not responsible for, and conversely, many an operating man has been praised for something which he had about as much to do with as the man in the moon.

Now it is not possible for me this evening to explain in detail the methods by which such statements are prepared, but Mr. Harrison has covered this pretty completely in a series of articles which appeared in the *Management Engineering Magazine* in the latter part of last year. This series of articles covers 37 pages and 9 full page diagrams and I will be glad to send reprints of this entire series to any of you who will give your names and addresses to your secretary.

Simplicity

There are, however, certain features of a properly designed system of standard costs to which I would like to draw your attention. Firstly, I would like to say a few words on the subject of simplicity. There is nothing simpler than the old style detailed cost system under which we post every time card and stores requisition to cost of parts cards and then distribute the cost of the parts to the assembly cost cards, and from these to the cost sheets for the completed article. Also, there is nothing in the cost accounting line which costs more from the standpoint of results than such a system.

There are two kinds of simplicity when we consider machines or cost systems—simplicity of design and simplicity of operation. The automobile is an excellent example of these two kinds of simplicity. You know quite well that the average lady chauffeur doesn't know a thing about the mechanism but this does not prevent her from being an excellent driver; at least there are ladies who are excellent drivers though personally I always give them a wide berth when I am driving myself. If simplicity of design were the one and only requisite in a machine we would still be using wheelbarrows for transportation, needles instead of sewing machines, and typewriters, adding machines and other labor saving devices would be unknown.

Getting the Best Results

Now to get the best results in cost accounting it is necessary with complex business to have a system somewhat complex in design but the complexity must end right there. The cost system of the future will be complex in design and exceedingly simple in operation; in fact, the operation of a cost system in the main should be a nearly automatic proposition. This development is in line with that of machinery. Take the use of the automatic machine—far more complex in design than the old time machine but turning out a better product in less time and with far less experienced operators.

I have talked to manufacturers who admit (and I never found a manufacturer who wouldn't admit this) that his business was about as mean and as complex a proposition as it would be possible to conceive of and who insisted and demanded that his cost system should be so exceedingly simple that he could thoroughly understand it in all of its details in fifteen minutes study. And that same

man will go home and experiment with the Armstrong super-regenerative receiver. If the amount of brain work which is devoted to the building of freak radio circuits were given to cost problems we would find that the quality of these would improve greatly.

Must Not Sacrifice Efficiency

Now don't misunderstand me—simplicity is of the utmost importance and the rule should be that a system is as little complex as it is possible to get it, but if we are to sacrifice efficiency for simplicity of design then obviously we had better accept the inevitable and admit that complex business demands some complexity in system design.

Let me try and make this point clearer. One of our problems has been the designing of a cost system for the National Cash Register Company which is along standard cost lines. Now the simplest way in which to get labor efficiency data would be to figure every one of our time cards at standard, but with several million time cards in a year this would be an appalling proposition. By making periodical tests or appraisals, however, of a limited number of tickets, we are able to rely upon the laws of averages and apply our specific efficiency ratios to the whole payroll and do this at probably one percent of what it would cost to carry the work out in complete detail. But obviously handling the work in this way is more complex than would be necessary if we made a fast and hard rule that every time card was priced and extended at standard.

There is another thing about complexity of design and that is that the average manufacturer doesn't know how complex his system really is. I call to mind a case where Mr. Harrison drew up plans for one of our clients for handling an important section of the work in his business and presented them. He looked them over and said, "Nothing doing, friend Harrison." Mr. Harrison was rather surprised because he knew the proposed plan was far ahead of that being followed, so he said to him, "All right, I have drawn up an alternative plan for your consideration," and showed him a diagram with about twice as many forms on it as the other one and of course was told very emphatically that the alternative plan was worse than the one first shown him, whereupon, Mr. Harrison broke the news to him gently that this second plan was the one which was then in use.

Must Explain Causes of Variation

Now I think you will all agree with me that unless a cost system will enable the cost accountant to answer the president's why when the statements show that the actual costs are in excess of standard, it can hardly be considered as adequate. Cost accounting isn't scientific unless it does explain the causes of cost variations. To make an analysis of an increased cost by causes obviously demands a knowledge of the laws underlying cost variations. This is a difficult and complex proposition and yet in one of the most complex businesses which I have had to prescribe for, the complete work of analyzing cost variations is handled by one girl twenty years old who gives only a part of her time to this work. How can she do this? She does it primarily by the aid of formulas. But there are limitations to the use of formulas alone, for as Taylor stated in the "Principles of Scientific Management"—

"If a good mathematician who had these formulas before him were to attempt to get the proper answer (viz.: to get the correct cutting speed and feed by working in the ordinary way), it would take him from two to six hours, say to solve a single problem; far longer to solve the mathematical problem than would be taken in most cases by the workman doing the whole job on his machine."

Taylor's formulas were of limited practical value to the man in the shop until Carl Barth made use of them in his slide rules, for as Taylor stated—

"By means of this slide-rule, one of these intricate problems can be solved in less than half a minute by any good mechanic, whether he understands anything about mathematics or not, thus making available for every day practical use the years of experimenting on the art of cutting metals.

This is a good illustration of the fact that some way can always be found of making practical, everday use of complicated scientific data, which appears beyond the experience and range of the technical training of ordinary practical men."

Now this same principle applies to the analysis of cost variations by the use of cost variation sheets. It is possible for these formulas to be effectively used by persons who haven't the faintest idea of what it is all about any more than the average girl in a cost department who uses a slide rule understands the principles of the logarithms on which this slide rule is based.

Reducing Cost of Accounting

Up to now I have emphasized the fact that a properly designed standard cost system will make profits for the manufacturer by drawing his attention promptly and automatically to the existence of preventible wastes. A standard cost system can also save money for the manufacturer by reducing the high cost of cost accounting. One example of this is as regards the figuring of elapsed time on individual operations. In a factory manufacturing a standard product it is not necessary to use elapsed time clocks or to figure the time spent on individual operations. If we know the total time a man worked and the standard hours represented by his production during that time, we have all that is necessary for obtaining our data relative to labor efficiency and for the other purposes of a cost system such as the figuring of current costs, and cost of sales. Standard costs enable us to eliminate a great deal of clerical work both in the factory and the office, and I have known of several cases where detail costs were abandoned owing to the immense amount of clerical work involved and replaced by standard costs.

The figuring of standards is, of course, in many businesses a large undertaking but the point I want to make as regards this is that a business should have standards for all operations whether it operates a standard cost system or not. Last summer Mr. Harrison spent some weeks in England lining up a standard cost system for the Rolls-Royce people and to his surprise found that this company, which, in addition to making its famous automobile chassis, also makes aeroplane engines, had standard times figured for every operation. And note this—when any repair work was sent them they invariably figured the cost in advance and notified the owner. Perhaps this is one of the reasons why they have been able to maintain the reputation of making the best car in the world and that it was a Rolls-Royce aeroplane engine which first made the trip across the Atlantic.

Cost accounting is a complex science and it is obviously not possible for me in an address like this to do more than outline certain main principles but I believe you will find that the time you are spending in listening to me will be well repaid if you carry away one idea, namely, that one must consider a cost system like any other machine in the business—is it a profit maker? If it isn't, why isn't it? If the cost men here will consider their problems in this light they will increase their value to their employees and themselves. Another thought and that is that information tucked away in the files isn't of much use. Cost statements should not call for analysis—they should disclose the essential facts automatically.

A Vision of the Future

It is well for us to hold before us a vision of the future so that we can gradually shape our methods to conform to advancing knowledge, and before I close I would like to give you my impression of where accounting in general is headed. These are not our views alone—we share them with the comptrollers of some of the most progressive of our large corporations. The accountant

of the future will be a man of wide vision. He will spend more time in figuring what his balance sheet will be six months from now than in considering what the balance sheet at the close of last month showed. Profits as well as costs will be predetermined and each month the comptroller will submit a statement showing the actual profits in relation to standard and an analysis showing the causes contributing to the failure to realize the standard profits. This is the logical development of the cost variation statements which I have been discussing this evening. It will show to what extent potential profits failed to materialize owing to the sales quotas not having been realized. Detailed statements will be furnished analyzing these figures by territories and salesmen. In this connection I may mention that each week the National Cash Register Company prints and distributes a statement showing a comparison between the actual and standard sales for the previous week and for the year to date for approximately 2,000 salesmen, so my idea is hardly as far fetched as it may appear to some of you.

The profit variation statement will also show to what extent profits varied from estimates owing to variations from the standard prices. It will show also the variation in profits due to variances from standard selling and administration expenses, and of course to variations from the standard costs of manufacture.

It is this kind of accounting which is going to elevate the accountant to his legitimate place in the sphere of industry. He will be the mariner of the business world. He will be able to show the directors not only where the business ship is at the present but he will also chart its future course. He will, of course, require to make corrections from time to time but so does the mariner. And the result of this work will be to materially aid in bringing the business ship into the fair haven of substantial profits.

Cost Convention for Philadelphia

So successful was the convention of the Cost Association recently held in Cleveland that arrangements have already been started for the next convention to be held sometime in the fall at Philadelphia. The general committee of arrangements for this convention has been appointed as follows:

Chairman of the Committee: James A. Reilly, American Writing Paper Company, Holyoke, Mass.; E. J. Fitzgerald, Scott Paper Company, Paul Koenig, Continental Paper and Bag Mills, Harry C. Bradford, Rex Paper Company, Mr. Byron, Hammermill Paper Company.

The exact date of the Convention will be fixed later, but the selection of Philadelphia and the appointment of the above committee insures that the next Cost Convention will be well arranged and the best possible speakers secured. It will be noted that the members of the above committee represent mills making all grades of paper in different localities.

Berkshire Local Division to Meet

The next meeting of the Berkshire Local Division of the Cost Association of the Paper Industry will be held on June 26 at the Irving House, Dalton, Mass. President William W. Howe requests that all pulp and paper mills in that vicinity send representatives to this meeting, and make their reservations as early as possible. Under direction of Mr. Howe, this Division has held very successful meetings monthly during the past season and the work has been of material benefit to the cost accountants in that section.

Studying Condenser Paper

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., June 4, 1923.—The Paper Division of the Bureau of Standards has prepared a report on the experimental manufacture of condenser paper for power condensers. This report describes the methods and procedure used to obtain a light weight paper which is free from electrical conducting particles.

Seek to Enjoin Androscoggin Pulp Co.

[FROM OUR REGULAR CORRESPONDENT.]

PORTLAND, Me., June 4, 1923.—Legality of a patent for the manufacture of clothboard in pulp mills was an issue in the United States district court here last week. The hearing was conducted by Judge Clarence Hale in an infringement action brought by the E. A. McMullin Company, of North Adams, Mass., against the Androscoggin Pulp Company, of South Windham, Me., and Steep Falls, Me.

In the bill, Edward A. McMullin, of North Adams, is asserted to be the inventor of certain improvements in the manufacture of clothboard and it is alleged that he made an application for a patent June 27, 1910, and later sold his rights to the plaintiff company. Letters patent were issued February 29, 1916, it is declared. The chief allegation is that the defendant is making clothboard by use of the process invented by Mr. McMullin.

The plaintiff asks that the defendant be enjoined from further infringement; be ordered to pay to the plaintiff profits made by reason of such alleged infringement; be ordered to pay damages and that the case be referred to a master to determine profits and to assess damages.

The defense in its answer asserts that the alleged invention was not really a change from methods which had been in use for many years before the date of the patent and that other persons patented the process several times in the period from 1880 to 1909. Several other mills use this system of manufacture, the defense alleges. It is asked that the bill be dismissed without costs.

J. J. Cushman, of Boston, and Woodman, Whitehouse and Littlefield represent the plaintiff and Odin Roberts appears for the defendant corporation.

Boston Paper Trade to Have Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 4, 1923.—The Boston Paper Trade will hold its annual summer meeting this year on Thursday, June 14, at the Cliff Hotel, North Scituate Beach, which is on the South Shore of Massachusetts. The association has been given the exclusive use of the Hatherly Golf Club for the day. A variety of sports have been arranged for those not interested in golf or tennis. Arrangements have been made to meet all guests at Copley Square at 8.30 o'clock on the morning of the outing, from whence they will be conveyed in automobiles to the scene of the day's outing.

Output of Pulpstones in 1922

According to figures reported to the Department of the Interior through the Geological Survey the output of pulpstones in the United States in 1922 amounted to 5,157 short tons (1,619 pieces), valued at $445,286, a decrease of 48 per cent in quantity and 41 per cent in value. The demand at paper mills, which were very active late in 1920 and early in 1921 and which during and after the war could not renew their supply of English stone, increased the market for domestic pulpstones in 1921, but the depression that followed this activity caused a decrease in the output of pulpstones in 1922.

Eagle Mill at Bentley Springs Sold

BENTLEY SPRINGS, Md., June 4, 1923.—The Eagle paper mill, owned by Mrs. Charles Mays, Baltimore, has been purchased by a Mr. Weber, of New York. The mill, which has been idle for the past two months, since vacated by A. R. Stamets, is being put into first class condition, and it is expected will be put into operation within the next few weeks. The manufacturing of grey eagle paper will again be carried on. Several acres of farming land also figure in the deal.

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JUNE 2, 1923

SUMMARY

News print.....899 rolls, 149 bls.
Wrapping paper.....89 bls, 753 rolls
Packing paper.....5,512 rolls, 2,028 bls.
Cigarette paper.....120 cs.
Hangings.....10 cs., 34 bls.
Wall paper.....15 bls., 13 cs.
Tissue paper.....21 cs.
Filter paper.....92 bls., 5 cs.
Writing paper.....25 cs.
Tracing paper.....3 cs.
Metal paper.....2 cs.
Fenestra paper.....24 cs.
Helio paper.....2 cs.
Drawing paper.....89 cs.
Printing paper.....14 cs.
Miscellaneous paper.....248 cs., 30 rolls, 568 bls.

CIGARETTE PAPER

De Manduit Paper Corp., Pipestone Co., Havre, 30 cs.
Rose & Frank, by same, 52 cs.
Rose & Frank, Paris, Havre, 4 cs.
Liggett & Myers Tobacco Co., by same, 30 cs.
The Surbrug Co., by same, 4 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Adriatic, Liverpool, 4 cs.
W. H. S. Lloyd & Co., by same, 8 bls.
W. H. S. Lloyd & Co., Mesaba, London, 13 bls.
W. H. S. Lloyd, by same, 6 cs.
A. C. Dodman, Jr., Cedric, Liverpool, 13 bls.

WALL PAPER

A. Murphy & Co., Cedric, Liverpool, 5 bls.
A. Murphy & Co., Adriatic, Liverpool, 10 bls.
A. Murphy & Co., by same, 1 cs.
R. F. Downing & Co., Havana Maru, Yokohama, 12 cs.

TISSUE PAPER

F. C. Strype, Cedric, Liverpool, 14 cs.
F. C. Strype, Adriatic, Liverpool, 3 cs.
Meadows, Wye & Co., by same, 4 cs.

FILTER PAPER

E. Fougera & Co., La Bourdomais, Bordeaux, 82 bls.
Geo. Lueders & Co., Hudson, Bordeaux, 10 bls.
H. Reeve Angel & Co., Albania, London, 1 cs.
H. Reeve Angel & Co., Majestic, London, 1 cs.
R. N. Delapenba, Blossom Heath, Marseilles, 3 cs.

WRITING PAPER

Defiance Manfg. Co., Blossom Heath, Marseilles, 6 cs.
E. Dietzgen & Co., by same, 19 cs.

TRACING PAPER

R. F. Downing & Co., Berengaria, Liverpool, 3 cs.

METAL PAPER

M. G. Lange, Bayern, Hamburg, 2 cs.

FENESTRA PAPER

Birn & Wachenheim, Paris, Havre, 24 cs.

HELIO PAPER

Keuffel & Esser, Adriatic, Liverpool, 2 cs.

DRAWING PAPER

Keuffel & Esser, Adriatic, Liverpool, 6 cs.
Keuffel & Esser, Bayern, Hamburg, 65 cs.
E. Dietzgen & Co., Falls City, Hamburg, 17 cs.
H. Reeve Angel & Co., Mesaba, London, 1 cs.

PRINTING PAPER

B. F. Drakenfeld & Co., Caronia, Liverpool, 14 cs.

NEWS PRINT

Parsons & Whittemore, Eastern Star, Helsingfors, 536 rolls.
Chemical Nat'l Bank, Ohio, Hamburg, 363 rolls.
Chemical Nat'l Bank, by same, 149 bls.

WRAPPING PAPER

Carl Steiner, Ohio, Hamburg, 34 bls.
Carl Steiner, Pr. Fillmors, Bremen, 46 bls.
Japan Paper Co., Bayern, Hamburg, 9 bls.
Republic Bag & Paper Co., by same, 753 rolls.

PACKING PAPER

Republic Bag & Paper Co., Ohio, Hamburg, 162 rolls.
Republic Bag & Paper Co., by same, 765 bls.
Fernstrom Paper Co., Inc., by same, 38 bls.
American Mills Co., Ala, Rotterdam, 504 bls.
Republic Bag & Paper Co., Veendam, Rotterdam, 421 bls.
Republic Bag & Paper Co., by same, 5,350 rolls.

PAPER

Keuffel & Esser, Bayern, Hamburg, 8 cs.
Guaranty Trust Co., Ohio, Hamburg, 50 rolls.
R. F. Downing & Co., Pipestone Co., Havre, 2 cs.
Whiting & Patterson, Chicago, Havre, 11 cs.
Whiting & Patterson, Paris, Havre, 3 cs.
Perry, Ryes & Co., Tarantia, Glasgow, 57 cs.
Phoenix Shipping Co., Mongolia, Hamburg, 5 cs.
Carl Steiner, Falls City, Hamburg, 28 cs.
P. C. Zuhlke, by same, 64 cs.
Wilkinson Bros. & Co., Inc., Tyrifjord, Trondhjem, 568 bls. paper.
F. L. Kramer & Co., Pres. Monroe, London, 4 cs.
Japan Paper Co., G. Verdi, Genoa, 66 cs.

RAGS, BAGGING, ETC.

Castle & Overton, Wyncote, Dundee, 482 bls. jute waste.
Castle & Overton, Fenchurch, Barcelona, 90 bls. rags.
Castle & Overton, Suffern, Havre, 174 bls. rags.
Castle & Overton, by same, 51 bls. bagging.
E. J. Keller Co., Inc., Fenchurch, Barcelona, 141 bls. cotton waste.
E. J. Keller Co., Inc., Gustavsholm, Gothenburg, 13 bls. new cuttings.
Katzenstein & Keene, Inc., London Exchange, London, 62 bls. rags.
Castle & Overton, Breiz Izel, St. Nazare, 221 bls. rags.
Castle & Overton, by same, 241 bls. bagging.
E. J. Keller Co., Inc., Breiz Izel, Rouen, 145 bls. bagging.
E. J. Keller Co., Inc., by same, 9 bls. new cuttings.
E. J. Keller Co., Inc., by same, 74 bls. rags.
Ayres, Oddy & Co., Caronia, Liverpool, 75 bls. cotton waste.
Royal Manufacturing Co., by same, 21 bls. cotton waste.
Equitable Trust Co., Hudson, Bordeaux, 299 bls. rags.
Brown Bros. & Co., Idaho, Newcastle, 72 bls. bagging.
E. J. Keller Co., Inc., by same, 295 bls. rags.
E. J. Keller Co., Inc., Bayern, Hamburg, 220 bls. jute waste.
American Wood Pulp Corp., Pipestone Co., Havre, 447 bls. rags.
E. J. Keller Co., Inc., Falls City, Hamburg, 280 bls. rags.
E. J. Keller Co., Inc., by same, 48 bls. jute waste.
Salomon Bros. & Co., by same, 320 bls. jute waste.
S. Silberman, by same, 136 bls. rags.
G. M. Granes, Pres. Monroe, London, 119 bls. bagging.
Castle & Overton, by same, 52 bls. rags.
Irving Bank, Col. Trust Co., Mesaba, London, 208 bls. rags.
Salomon Bros. & Co., Lapland, Antwerp, 216 bls. flax waste.
New England Waste Co., Juliana, Leghorn, 304 bls. cotton waste.
Royal Manfg. Co., Ala, Rotterdam, 39 bls. cotton waste.
Katzenstein & Keene, Inc., by same, 32 bls. rags.
American Wood Pulp Corp. by same, 164 bls. rags.
Castle & Overton, by same, 55 bls. rags.
Castle & Overton, by same, 66 bls. paper stock.
S. Silberman, by same, 168 bls. paper stock.
S. Silberman, by same, 339 bls. bagging.
Waste Material Trading Corp., by same, 96 bls. bagging.
L. A. Abenheimer, by same, 70 bls. bagging.
E. J. Keller Co., Inc., by same, 176 bls. bagging.
Katzenstein & Keen, Inc., Leeds City, Hamburg, 310 bls. rags.
Katzenstein & Keene, Inc., Angela, Barcelona, 129 bls. bagging.
Salomon Bros. & Co., Leeds City, Hamburg, 155 bls. jute waste.
Salomon Bros. & Co., Belgian, Antwerp, 178 bls. flax waste.
Salomon Bros. & Co., Meropi, Antwerp, 101 bls. rags.

OLD ROPE

Katzenstein & Keene, Inc., Angela, Barcelona, 19 bls.
Chemical Nat'l Bank, Pres. Fillmore, Bremen, 49 coils.
Brown Bros. & Co., Mesaba, London, 49 coils.
Brown Bros. & Co., Idaho, Newcastle, 151 coils.
Brown Bros. & Co., Idaho, Hull, 345 coils.
E. J. Keller Co., Inc., Idaho, Newcastle, 113 coils.
Brown Bros. & Co., Breiz Izel, St. Nazare, 39 coils.
Katzenstein & Keene, Inc., W. Lashaway, Leghorn, 44 coils.

WOOD PULP

Castle & Overton, Bremen, Bremen, 134 bls. wood pulp.
Castle & Overton, Pres. Arthur, Bremen, 133 bls, 30 tons wood pulp.
Castle & Overton, Bayern, Hamburg, 525 bls. 107 tons wood pulp.
Castle & Overton, Pres. Fillmore, Hamburg, 700 bls. wood pulp.
Lagerloef Trading Co., Eastern Star, Helsingfors, 3,750 bls, 660 tons wood pulp.
H. Hallesen, Ohio, Hamburg, 491 bls. wood pulp.
R. F. Hammond, Inc., Stockholm, Gothenburg, 800 bls., 100 tons wood pulp.
M. Gottesman & Co., Inc., Bremen, Bremen, 600 bls. wood pulp.
M. Gottesman & Co., Inc., Ohio, Hamburg, 1,165 bls. sulphite.
R. F. Hammond, Inc., Tyrifjord, Christiania, 2,000 bls., 400 tons dry sulphite.
E. M. Sergeant Co., Tyrifjord, Greaker, 125 bls. dry sulphite.
E. M. Sergeant Co., Idefjord, Greaker, 125 bls. dry sulphite.
R. F. Hammond, Inc., Idefjord, Christiania, 1,000 bls., 200 tons dry sulphite.
J. Andersen & Co., Idefjord, Sarpsborg, 2,160 bls. bleached sulphite.
Wood Pulp Trading Co., Ltd., Falls City, Hamburg, 650 bls., 131 tons chemical sulphite.
Nat'l City Bank, West Jester, Hamburg, 1,500 bls. wood pulp.

WOOD FLOUR

B. L. Soberski, Idefjord Frederickstad, 750 bags.

CASEIN

Kalbfleisch Corp., Western World, Buenos Aires, 1,667 bags.
Atterbury Bros., by same, 417 bags.
A. Hurst & Co., Chicago, Havre, 163 bags.
A. Hurst & Co., Berengaria, Liverpool, 10 crates.
A. Hurst & Co., by same, 10 bbls.
Brown, Bros. & Co., Paris, Havre, 67 bags.
T. M. Duche & Sons, Vestris, Buenos Aires, 2,119 bags.

CINCINNATI IMPORTS

WEEK ENDING JUNE 2, 1923

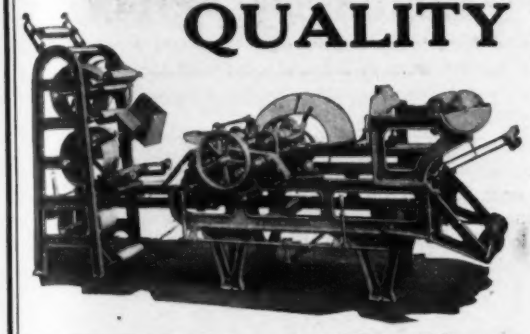
McKinley & Co., Dryden, Hongkonk, 20 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 2, 1923

Castle & Overton, Emden, Hamburg, 700 bls, 140 tons wood pulp.
Castle & Overton, by same, 150 bls. wood pulp.
Castle & Overton, by same, 525 bls. wood pulp.
R. Dollar Co., Com'l Traveller, Vancouver, 1,876 bls. sulphite.
E. J. Keller Co., Inc., Breiz Izel, Brest, 262 bls. rags.
E. J. Keller Co., Inc., Breiz Izel, Havre, 191 bls. rags.
E. J. Keller Co., Inc., Breiz Izel, Rouen, 126 bls. rags.
E. J. Keller Co., Inc., Hudson, St. Nazare, 63 bls. rags.
Castle & Overton, Hudson, Bordeaux, 192 bls. rags.
Amer. Exchange Nat'l Bank, Hudson, St. Nazare, 205 bls. rags.
New York Trust Co., by same, 132 bls. rags.
American Wood Pulp Corp., Pipestone Co., Havre, 230 bls. rags.
H. T. Smith Co., by same, 30 bls. rags.
Katzenstein & Keene, Inc., by same, 142 bls. rags.
E. J. Keller Co., Inc., by same, 311 bls. rags.
Waste Material Trading Corp., by same, 561 bls. rags.
E. J. Keller Co., Inc., Blossom Heath, Marseilles, 116 bls. rags.
E. J. Keller Co., Inc., Ala, Rotterdam, 108 bls. rags.
D. J. Murphy, by same, 683 bls. rags.
Castle & Overton, by same, 411 bls. rags.
Waste Material Trading Corp., by same, 541 bls. rags.
S. Birkenstein & Son, by same, 601 bls. rags.
E. Butterworth & Co., Inc., by same, 87 bls. rags.
Katzenstein & Keene, Inc., by same, 453 bls. rags.

(*Continued on page 74*)



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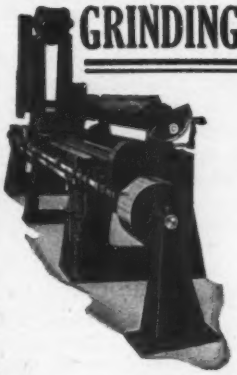

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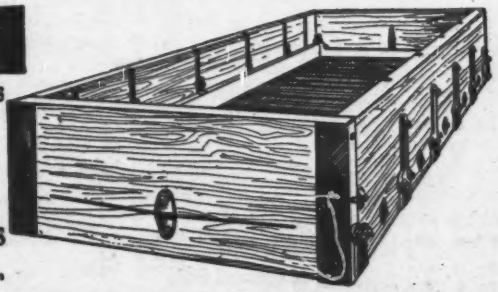

New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, June 6, 1923.

Paper men in New York are digging in for the dull summer months in most quarters although a few manufacturers of certain grades are fortunate enough to be filled up with orders to carry them well into next month and in some cases almost to the end of July. This applies particularly to news print paper which has been moving better than most of the other grades.

There is no doubt that the market is getting ready to take a vacation, but experts are sure it is going to be a shorter one than usual this year. Members of the trade themselves, often as they may deny it, are not averse to the little let-up which summer always brings.

For the more fortunate ones it means time for the really important things of life such as sinking a twenty-five foot putt on a sunny green or watching a comber rear itself lazily, curl and disappear with a husky laugh in a smother of white far up the sand. In the back country the nights are cool and the only sound is the tinkle of cowbells in upland pastures. The pine woods on the shoulders of the mountains smell sweetest at this time of year. Is it any wonder that the market is slowing up?

These rather than the usual economic reasons are probably the real causes for the midsummer dullness. Readjustments are always occurring during the present season and there is nothing indicative of any unusual condition in them.

Fine papers are still in fairly good demand although there has been some slight falling off in the call for them on the open market. The only places where there have been any marked reductions in price are those where a dealer is trying to get rid of a distressed lot.

News print is still in a thriving condition with the mills reporting contracts to keep them busy for the next twenty or thirty days and in many instances for a much longer period. Trading on the open market is a little duller than it has been. There is considerable speculation on just how much the death of *The Globe*, which was merged by Frank Munsey with *The Sun* last week, is going to influence the news print market. Certainly the effect will be very local, but someone has lost a good fat contract.

Book paper is still moving at the same steady pace that it has been going for the past month. There were a few of the indications of the usual slackening down for the summer, but these did not extend beyond the dealers and the mills are all said to be running at capacity.

Tissues are not in good demand as yet, but dealers still maintain their optimism. There is considerable in the open market with buyers still coy, but pricts are being maintained at the same level. Dealers and mill agents are settling down for a period of dulness.

Manila, fiber and kraft papers have all remained the same. There is a fair demand for them and dealers say they have no reason to be dissatisfied. Prices have remained stationary with no prospect of any radical changes.

Board is still in the doldrums so far as demand is concerned, but manufacturers and dealers are maintaining prices. Quotations are probably to be revised shortly, but when the change does come it is not expected that there will be any great marking down on all of the grades.

Mechanical Pulp

The demand for ground wood could scarcely be called brisk, but it has been more or less steady and prices have been firm, a sure indication that there has been enough trading to keep everybody satisfied. Grinding mills are reported to be working at full time, but some of them report that they anticipate a dry season with low water so that they are storing against such an emergency.

Chemical Pulp

Chemical pulp is still moving a little slowly this week and dealers say that they anticipate a little let-up during the next month. Importers report that they are doing a fairly saisfactory business. Members of the industry feel that they are strongly enough established to warrant them in keeping prices near their present level and they say that they do not look for any great revisions for some time to come.

Old Rope and Bagging

Bagging has not interested the mills much during the past week and the same thing is true of old rope. There is enough business being done on contract, however, to keep the prices from swinging through too wide an arc and dealers say that there is nothing unusual about the slowness in this market during the present season.

Rags

Roofing mills have shown some signs of interest in rags for July and August shipment during the week, but there are few other indications of any change in the general situation, both in imported and domestic rags. The higher grades are moving slowly, but dealers believe it is only a question of another week before there will be more of a call for them.

Waste Paper

Outside of a considerable movement in book stock there has been no great activity in the waste paper market. The demand is a little better than average for the summer months and while the trading is not heavy prices have shown no marked tendency to fluctuation.

Twine

Twine has remained at the same level this week as it was last. The market is still a little quiet, but the demand is steady and quotations are firm.

Link-Belt Improved Wood Grapple

The latest design of the Link-Belt Company, grapple for unloading, piling and reclaiming evenly piled pulpwood and logs and known as the "Improved Type" incorporates all of the features and details which careful study and long experience have proved to be advantageous and desirable. It is provided with very substantially reinforced, built-up, heavy section forged structural steel grapple arms, which gives maximum strength and resistance against breakage and distortion when handling frozen logs. Logs and pulpwood, regardless of length, have a tendency to roll or slide into the grapple, the points or teeth being especially formed to cause this action. This insures full loads. The closing drum which is of steel to give long life affords long life to the closing cable. Fouling of this closing cable is prevented by the husky guard. The heavy and practically indestructible flat link closing chains are made of hardened steel, made especially for this service.

There are numerous other refinements throughout but the above are the salient features of the superiority of the "Improved Type" over other grapples used. It might also be added, however, that this Improved Link-Belt wood grapple will readily handle ⅝ cord of wood 8' long, of a proportionate amount of shorter or longer wood.

Studying Rubber Latex

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., June 4, 1923.—The Paper Division of the Bureau of Standards has made an additional study of rubber latex in paper, with a view to determining whether the rubber undergoes any change. It is understood that it has been found that after a few days the chloroform extract decrease while the acetone extract increased.

Officials of the division say that it would seem that the rubber had changed by oxidation.

Market Quotations

Paper Company Securities

New York Stock Exchange closing quotations June 5, 1923.

	BID	ASKED
American Writing Paper Company, pref.	21¼	25
International Paper Company, com.	43½	44
International Paper Company, pref., stamped	69¼	69½
Union Bag & Paper Corporation	69	71

Paper

F. o. b. Mill.

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	16.00	@35.00
Superfine	14.00	@30.00
Tub Sized	10.00	@15.00
Engine Sized	8.50	@11.00
News—f. o. b. Mill—		
Rolls, contract	3.80 @	4.00
Rolls, transit	4.00 @	4.25
Sheets	4.25 @	4.50
Side Runs	3.50 @	4.15
Book, Cased—f. o. b. Mill		
S. & S. C.	7.25 @	9.00
M. F.	7.00 @	8.75
Coated and Enamel	9.00	@14.00
Lithograph	9.00	@14.00
Tissues—f. o. b. Mill		
White No. 1	.85 @	—
White No. 2	.80 @	—
Colored	1.10 @	—
Anti-Tarnish	1.40 @	—
Kraft	.90 @	.95
Manila	.80 @	—
Kraft—f. o. b. Mill—		
No. 1 Domestic	7.00 @	7.50
No. 2 Domestic	6.50 @	7.00
Imported	6.50 @	7.00
Screenings	3.25 @	3.50
Manila—		
No. 1 Jute	8.50 @	9.00
No. 2 Jute	7.75 @	8.50
No. 1 Wood	4.75 @	5.50
No. 2 Wood	4.00 @	4.50
Butchers	4.25 @	4.75
Fibre Papers—		
No. 1 Fibre	6.00 @	6.25
No. 2 Fibre	5.25 @	5.50
Common Bogus	3.50 @	—
Card Middies	4.00 @	5.00
Boards—per ton—		
News	62.50	@65.00
Straw	61.00	@64.00
Chip	60.00	@62.50
Binders' Boards	80.00	@83.00
Sgl. Mla.L1. Chip	78.00	@83.00
Wood Pulp	72.00	@78.00
Container	75.00	@82.00
Wax Paper—		
Self Sealing White 28 and 30 lb. basis	11.00	@12.00
Waxed Tissue	1.56 @	1.65
Glassine—		
Bleached, basis 25 lbs.	15.00	@16.00
Bleached, basis 30 lbs.	17.00	@18.00
Papermakers' Felts per ton—		
Dry	75.00	@85.00
Saturated	65.00	@75.00
Sheathing Paper, per ton—		
Rosin Sized (red and gray, 30 lbs. per 500 sq. ft.)	55.00	@65.00

Mechanical Pulp

(Ex-Dock)

No. 1 Imported 35.00 @40.00

(F. o. b. Mill)

No. 1 Domestic 36.00 @40.00

Chemical Pulp

(Ex-Dock, Atlantic Ports.)

Sulphite (Imported)—		
Bleached	4.50 @	5.00
Easy Bleaching	3.50 @	3.75
No. 1 strong unbleached	3.30 @	3.50
No. 2 Strong unbleached	2.85 @	3.10
No. 1 Kraft	3.25 @	3.40
Sulphate—		
Bleached	4.00 @	4.15
(F. o. b. Pulp Mill.)		
Sulphite (Domestic)—		
Bleached	4.50 @	5.00
Strong unbl'chd	3.10 @	3.30
Easy Bleaching		
Sulphite	3.25 @	3.50
News Sulphite	3.00 @	3.25
Mitscherelich	3.20 @	3.30
Kraft (Domestic)	2.10 @	3.30
Soda Bleached	4.25 @	4.35

Domestic Rags

New

Prices to Mill, f. o. b. N. Y.

Shirt Cuttings—		
New White, No. 1	12.00	@12.25
New White, No. 2	5.50 @	6.00
Silesias, No. 1	7.00 @	7.50
New Unbleached	10.50	@11.00
Washables	4.50 @	5.00
Fancy	5.25 @	5.50
Cotton—acording to Grades—		
Blue Overall	7.00 @	7.50
New Blue	4.25 @	5.00
New Black Soft	4.00 @	4.75
New Light Seconds	2.00 @	2.75
O. D. Khaki Cuttings	4.00 @	4.50
Men's Corduroy	2.75 @	3.50
New Canvas	6.25 @	7.00
New Black Mixed	2.00 @	2.75
Old		
White, No. 1—		
Repacked	5.50 @	6.00
Miscellaneous	4.75 @	5.25
White, No. 2—		
Repacked	3.25 @	3.75
Miscellaneous	2.50 @	3.00
St. Soiled, White	1.75 @	2.00
Thirds and Blues—		
Repacked	2.25 @	2.50
Miscellaneous	1.75 @	2.00
Black Stockings	2.75 @	3.00
Roofing Rags—		
Cloth Strippings	1.35 @	1.50
No. 1	1.20 @	1.30
No. 2	1.10 @	1.20
No. 3	.90 @	1.00
No. 4	1.00 @	1.10
No. 5A	1.00 @	1.10

Foreign Rags

New Light Silesias	6.00	nominal
Light Flannelettes	6.75	nominal
Unbl'chd Cottons	7.50	nominal
New White Cuttings	9.50	nominal
New Light Oxfords	6.00	nominal
New Light Prints	4.50	nominal
New Mixed Cuttings	2.00 @	2.50
New Dark Cuttings	1.90 @	2.10
No. 1 White Linens	10.00	nominal
No. 2 White Linens	6.50	nominal
No. 3 White Linens	5.00	nominal
No. 4 White Linens	3.50	nominal
Old Extra Light Prints	2.00	nominal
Ord. Light Prints	1.75	nominal
Med. Light Prints	1.50	nominal
Dutch Blue Cotton	1.85 @	2.15
German Blue Cottons	1.65	nominal
Ger. Blue Linens	3.50	nominal
Checks and Blues	1.50	nominal
Dark Cottons	1.30 @	1.35
Shoppery	1.00 @	1.05
French Blues	1.75 @	2.00

Bagging

Prices to Mill F. o. b. N. Y.

Gunny No. 1—		
Foreign	1.00 @	1.10
Domestic	1.00 @	1.10
Wool, Tares, light	1.45 @	1.55
Wool, Tares, heavy	1.40 @	1.50
Bright Bagging	1.05 @	1.20
No. 1 Scrap	1.05 @	1.20
Sound Bagging	.85 @	.95
Manila Rope—		
Foreign	6.25 @	6.50
Domestic	6.50 @	6.75
New Bu. Cut	2.15 @	2.25
Hessian Jute Threads—		
Foreign	5.75 @	6.00
Domestic	2.10 @	2.20
Mixed Strings	.90 @	1.00

Twines

Cotton—(F. o. b. Mill)		
No. 1	.35 @	.37
No. 2	.31 @	.33
No. 3	.37 @	.39
India, No. 6 basis—		
Light	.20 @	.21
Dark	.19 @	.20
B. C., 18 basis	.41 @	.42
A. B. Italian, 18 Basis	.51 @	.61
Finished Jute—		
Dark, 18 basis	.29 @	.30
Light, 18 basis	.26 @	.27
Jute Wrapping, 3-6 Ply—		
No. 1	.23 @	.24
No. 2	.21 @	.22
Tube Rope—		
4-ply and larger	.15 @	.17
Fine Tube Yarn—		
5-ply and larger	.19 @	.21
4-ply	.20 @	.22
3-ply	.20 @	.22
Unfinished India—		
Basis	.16 @	.17
Paper Makers Twine		
Balls	.13 @	.15
Box Twine, 2-3 ply	.18 @	.19
Jute Rope	.17 @	.20
Amer. Hemp, 6	.33 @	.35
Sisal Hay Rope—		
No. 1 Basis	.15 @	.17
No. 2 Basis	.13 @	.15
Sisal Lath Yarn—		
No. 1	.14 @	.15
No. 2	.11 @	.13
Manila Rope	.18 @	.19

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	4.10 @	4.30
Hard, White, No. 2	3.50 @	3.80
Soft, White, No. 1	3.50 @	3.60
Flat Stock—		
Stitchless	2.15 @	2.25
Over Issue Mag.	2.25 @	2.35
Solid Flat Book	2.05 @	2.15
Crumpled No. 1	1.80 @	1.90
Solid Book Ledger	2.80 @	3.00
Ledger Stock	2.40 @	2.50
New B. B. Chips	.85 @	.95
Manilas—		
New Env. Cut	2.70 @	2.90
New Cut No. 1	2.00 @	2.25
Extra No. 1 old	1.70 @	1.80
Print	1.40 @	1.50
Container Board	1.15 @	1.25
Bogus Wrapper	.95 @	1.05
Old Krafts, machine compressed		
Bales	2.15 @	2.25
News—		
No. 1 White News	2.05 @	2.15
Strictly Overissue	1.20 @	1.30
Strictly Folded	1.05 @	1.10
No. 1 Mixed Paper	.85 @	.95
Common paper	.55 @	.65

CHICAGO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

F. o. b. Mill

All Rag Bond	35 @	40
No. 1 Rag Bond	30 @	35
No. 2 Rag Bond	18 @	25
Water Marked Sulphite	10 @	14
Sulphite Bond	9 @	12
Sulphite Ledger	11 @	14
Superfine Writing	18 @	24
No. 1 Fine Writing	14 @	22
No. 2 Fine Writing	12 @	20
No. 3 Fine Writing	9 @	12
No. 1 M. F. Book	6½ @	7
No. 1 S. & S. C. Book	7 @	7¼
Coated Book	9 @	10¼
Coated Label	9 @	10
News—Rolls mill	4 @	4½
News—Sheets, mill	4½ @	4¾
No. 1 Manila	4¾ @	6
No. 1 Fibre	5½ @	5¾
No. 2 Manila	4½ @	5
Butchers' Manila	4 @	4½
No. 1 Kraft	7 @	7½
No. 2 Kraft	6½ @	7
Wood Tag Boards	5 @	5½
Screenings	5 @	5½
Boards, per ton—		
Plain Chip	60.00	@65.00
Solid News	65.00	70.00
Manila Lined Chip	70.00	@72.50
Container Lined—		
85 Test	75.00	@80.00
100 Test	80.00	@85.00

Old Papers

F. o. b. Chicago

Shavings—		
No. 1 Hard White	3.75 @	3.90
No. 1 Soft Shav.	3.50 @	3.60
No. 1 Mixed	1.65 @	1.75
No. 2 Mixed	1.50 @	1.60
White Envel. Cuttings	3.60 @	3.75
Ledgers and writings	2.00 @	2.10
Solid Books	2.00 @	2.10
No. 1 Books, Light	1.75 @	1.85
Blanks	2.00 @	2.15
Ex. No. 1 Manila	2.00 @	2.15
Manila Envelope Cuttings	2.50 @	2.60
No. 1 Manilas	1.50 @	1.60
Folders News (over issue)	1.30 @	1.40
Old Newspaper	1.15 @	1.20
Mixed Papers	1.00 @	1.10
Straw Clippings	1.00 @	1.10
Binders Clippings	1.00 @	1.10
Kraft	2.40 @	2.50
New Kraft Cuts	2.60 @	2.70
Roofing Stock, f. o. b. Chicago, Net Cash—		
No. 1	32.00 @	—
No. 2	30.00 @	..
No. 3	38.00 @	—
No. 4	28.00 @	—

PHILADELPHIA

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.10 @	.60
Ledgers	.15 @	.40
Writings—		
Superfine	.15 @	.20
Extra fine	.12 @	.22
Fine	.20 @	.30
Fine, No. 2	.20 @	.25
Fine, No. 3	.15 @	.20
Book, M. F.	.06 @	.11
Book, S. S. & C.	.08 @	.15
Book, Coated	.08 @	.15
Coated Lithograph	.10 @	.15
Label	.08 @	.15
News	.05 @	.07
No. 1 Jute Manila	.12 @	.13
Manila Sul., No. 1	.08 @	.10
Manila No. 2	.07½ @	.08
No. 2 Kraft	— @	.10
No. 1 Kraft	— @	.11
Common Bogus	.02½ @	.03
Straw Board	75.00	@85.00
News Board	65.00	@70.00
Chip Board	62.50	@67.00
Wood Pulp Board	1.25 @	1.50
(Carload Lots)		
Binder Boards—		
Per ton	75.00	@80.00
Carload lots	75.00	@80.00
Tarred Felts—		
Regular	48.00	@50.00
Slaters	54.00	@56.00
Best Tarred, 1-ply (per roll)	1.35 @	1.50
Best Tarred, 2-ply (per roll)	1.00 @	1.15
Best Tarred, 3-ply	1.50 @	1.65

Bagging

F. o. b. Phila.

Gunny No. 1—		
Foreign	1.25 @	
Domestic	1.20 @	1.25
Manila Rope	5.00 @	6.25
Sisal Rope	.75 @	.80
Mixed Rope	.75 @	.80
Scrap Burlaps	1.00 @	1.25
Wool Tares, heavy	2.50 @	2.75
Mixed Strings	.75 @	.80
No. 1, New Lt. Burlap	1.75 @	2.00
New Burlap Cuttings	1.75 @	2.10

Old Papers

F. o. b. Phila.

Shavings—		
No. 1, Hard White	4.00 @	4.25
No. 2, Hard White	3.50 @	3.75
No. 1 Soft White	3.50 @	3.75
No. 2 Soft White	1.75 @	2.00

(Continued on page 76)

Imports and Exports of Paper and Paper Stock

(*Continued from page 70*)

Katzenstein & Keene, Inc., Galtymore, Glasgow, 67 bls. rags.
Katzenstein & Keene, Inc., Schoharie, London, 87 bls. rags.
Katzenstein & Keene, Inc., Manchester Port, Liverpool, 53 bls. rags.
Katzenstein & Keene, Inc., Carlier, Hamburg, 46 bls. rags.
Katzenstein & Keene, Inc., London Exchange, London, 242 bls. rags.
Katzenstein & Keene, Inc., Nuria, Barcelona, 906 bls. rags.
Castle & Overton, Carlier, Antwerp, 487 bls. rags.
Castle & Overton, Sarcoxie, Havre, 1,021 bls. rags.
Castle & Overton, Ivar, Copenhagen, 546 bls. rags.
Castle & Overton, Norwegian, Hamburg, 390 bls. rags.
E. J. Keller Co., Inc., Ville d'Oran, Algiers, 483 bls. rags.
E. J. Keller Co., Inc., Carlier, Antwerp, 1,274 bls. rags.
E. J. Keller Co., Inc., Norwegian, Antwerp, 330 bls. rags.
E. J. Keller Co., Inc., by same, 218 bls. flax waste.
E. J. Keller Co., Inc., Carenco, Marseilles, 125 bls. rags.
E. J. Keller Co., Inc., Manchester Port, Manchester, 292 bls. rags.
E. J. Keller Co., Inc., Fredericka, Trieste, 1,183 bls. rags.
E. J. Keller Co., Inc., Emden, Hamburg, 1,021 bls. rags.
E. J. Keller Co., Inc., by same, 123 bls. bagging.
Irving Bank, Col. Trust Co., by same, 165 bls. rags.
Phila. Nat'l Bank, by same, 282 bls. rags.
Castle & Overton, by same, 398 bls. rags.
Castle & Overton, Westchero, Antwerp, 259 bls. rags.
Katzenstein & Keene, Inc., by same, 238 bls. rags.
Phila. Nat'l Bank., by same, 58 bls. rags.
Phila. Nat'l Bank, by same, 243 bls. bagging.
Baring Bros. & Co., by same, 122 bls. bagging.
E. J. Keller Co., Inc., by same, 192 bls. bagging.
E. J. Keller Co., Inc., by same, 32 bls. new cuttings.
E. J. Keller Co., Inc., by same, 507 bls. rags.
American Wood Pulp Corp., by same, 1,017 bls. rags.
Brown Bros. & Co., by same, 54 bls. rags.
Waste Material Trading Corp., by same, 502 bls. rags.
E. J. Keller Co., Inc., Emden, Hamburg, 17 coils old rope.

BALTIMORE IMPORTS

WEEK ENDING JUNE 2, 1923

Lagerloef Trading Co., Eastern Star, Helsingfors, 12,350 bls, 2,000 tons wood pulp.
Nat'l City Bank, Emden, Hamburg, 4,829 bls. 966 tons wood pulp.
R. F. Hammond, Inc., Eisenbach, Bremen, 1,400 bls, 200 tons wood pulp,
A. Brown & Sons, Hudson, Bordeaux, 312 bls. rags.
A. Brown & Sons, Hudson, Havre, 570 bls. rags.
Katzenstein & Keene, Inc., W. Lashaway, Leghorn, 46 bls. rags.
A. Brown & Sons, Falls City, Hamburg, 796 bls. rags.

BOSTON IMPORTS

WEEK ENDING JUNE 2, 1923

Lagerloef Trading Co., Eastern Star, Helsingfors, 5,702 bls, 978 tons wood pulp.
R. F. Hammond, Inc., Ivar, Christiania, 500 bls, 100 tons wood pulp.
J. A. & W. Bird & Co., Otho, Buenos Aires, 1,418 bgs, 85,080 ks. casein.
Castle & Overton, Schoharie, London, 124 bls. waste paper.
Katzenstein & Keene, Inc., Nevisian, Liverpool, 95 bls, new cuttings.
E. J. Keller Co., Inc., Belgian, Antwerp, 68 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING JUNE 2, 1923

E. J. Keller Co., Inc., Deutschfeld, Hamburg, 194 lbs. bagging.
Katzenstein & Keene, Inc., Jansor, Barcelona, 140 bls. bagging.
Castle & Overton, Niagara, Havre, 847 bls. rags.
Castle & Overton, by same, 90 bls. bagging.
Castle & Overton, Michigan, Havre, 205 bls. rags.

CHARLESTON IMPORTS

WEEK ENDING JUNE 2, 1923

Katzenstein & Keene, Inc., Flour Spar, Ghent, 143 bls. bagging.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., June 6, 1923.—The Bureau of Supplies and Accounts, Navy Department, will receive bids on June 19 for 384,000 rolls of toilet paper.

The Government Printing Office will receive bids on June 8 for 3,000 lbs. of back lining paper in 24 in. rolls.

The purchasing officer of the Government Printing Office will receive bids for 100,000 lbs. (100,000 sheets) chip board, 36 x 38.

The printing office has received the following bids for 20,800 lbs. 26½ x 41 India tint coated cover paper: Garrett Buchanan Company, $.1075 per lb.; Maurice O'Meara Company, $.1075; Reese & Reese, $.10575; The Broderick Paper Company, $.0995; Dobler & Mudge, $.105; Barton, Duer & Koch Paper Company, $.103; Mathers-Lamm Paper Company, $.107; R. P. Andrews Paper Company, $.1015; Whitaker Paper Company, $.095. Five reams best quality tissue, Japanese fibre, 19 x 24, 500 sheets to the ream: Mathers-Lamm Paper Company, $5.90 per ream; The Manhattan Supply Company, $7.47; Whitaker Paper Company, $9.57.

46,575 lbs. white heavy ledger paper: R. P. Andrews Paper Company at $.273 per lb.; The Whitaker Paper Company, $.327; Old Dominion Paper Company, $.31; Carew Manufacturing Company, $.279; Dobler & Mudge, $.35; Barton, Duer & Koch Paper Company, $.272; F. T. Parsons Paper Company, $.305.

7,880 lbs. 22 x 28, 196 lbs. flat cardboard; green, blue and buff: R. P. Andrews Paper Company at $39.00 per M; Dobler & Mudge, $42.00; Carter & Rice & Co., $38.25; Old Dominion Paper Company, $32.49; Mathers-Lamm Paper Company, $35.70; F. T. Parsons Paper Company, $32.00; Holyoke Card and Paper Company, $40.00; The Broderick Paper Company, $43.00; The Whitaker Paper Company, $34.37; Reese & Reese, $36.98; Maurice O'Meara Company, $40.98; Barton, Duer & Koch Paper Company, $34.00.

50,000 lbs. chipboard, 26 x 38, No. 50: Reese & Reese at $57.96 per ton; F. T. Parsons Paper Company, $57.50; R. P. Andrews Paper Company, $58.00; Dobler & Mudge, $57.00; The Whitaker Paper Company, $58.50; The Broderick Paper Company, $58.00; Mathers-Lamm Paper Company, $58.95; Philip Rudolph & Son, Inc., $59.50; The La Boiteaux Company, $56.55; Old Dominion Paper Company, $64.40; Wilkinson Bros. & Co., $64.40; Barton, Duer & Koch Paper Company, $61.00.

100 sheets Stencil Board, 19 x 24: The Whitaker Paper Company, $.16 per lb. and R. P. Andrews Paper Company, $6.50 net.

News of the Wisconsin Trade

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., June 5, 1923.—Slow but steady progress is being made on the new plant of the Valley Paper Mills at Neenah. The foundation work is completed and work on the superstructure is getting along. It will require several months, however, before the building will be ready to receive the machinery. The company hopes to be ready to begin operations late in the fall.

The Combined Locks Paper Company has sold its main office building in Appleton to a jewelry firm. The company recently purchased a tract of land here and on it will erect a splendid office building in the very near future.

F. J. Sensenbrenner, vice-president of the Kimberly-Clark Company, will remain on the board of directors of the Wisconsin Traction, Light, Heat and Power Company, whose capital stock recently was acquired by The North American Company, it was announced. The North American Company owns or controls the public utilities of a half dozen important American cities, including Milwaukee, Cleveland and St. Louis.

Navigation on the Fox river, opened a few weeks ago, promises to be the most extensive in history. Already large quantities of coal have been shipped to the paper mills along the river from the docks in Green Bay. Last year navigation was tied up for months because of a flood which washed out locks at Little Rapids.

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Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, June 6, 1923.

Lassitude marked the buying in the chemical markets during the week so far as paper manufacturers were concerned. There was little movement of any of the stocks on the open market and contract goods were going along at a slow pace. Chemical dealers said that they expected a quiet summer although it will not be so quiet as the one which came after the puncture of the war time prosperiy bubble. So far it has simply been an average season with the usual slack demand. Prices remained generally firm.

BLEACHING POWDER.—Owing to the difficulty of keeping bleaching powder during the warm weather dealers have been inclined to make some reductions during the week. There is not much buying and the commodity is now quoted at from 1.75 to 1.85 cents a pound.

CHINA CLAY.—China clay, too, has seen a slight falling off in demand during the week, but without any change in the price except in very isolated cases of distressed lots. The mills are not particularly interested in any of the grades. It is now quoted at from $14 to $17 a ton on the domestic and $15 to $23 on the imported depending upon the grade required.

BLANC FIXE.—Blanc fixe is not in particularly good demand although being somewhat of a specialty it is moving a little better than some of the other commodities in this market. It is still being generally quoted at from $50 to $55 a ton on the pulp grades and $85 to $86 a ton on the dry.

CAUSTIC SODA.—There was little trading in caustic on the open market during the week. Customers who buy on contract seem to be well supplied and dealers reported little business all around during the week. The price, however, has not changed and remains firm at 2.50 cents a pound on the basis of sixty per cent.

CASEIN.—Casein continued in comparatively poor demand during the week. There was not much of a call for it on the open market and the European product that has made its first bow in the local markets during the past month has not helped matters any for the domestic and Argentine dealers. The price has gone down a little and it is now quoted at from 17 to 18 cents a pound.

LIQUID CHLORINE.—Chlorine remained about the same this week as it has been for several weeks past. Not much demand and no change in price, which is 4.50 to 5.30 cents a pound, summarizes it.

ROSIN.—The market for naval stores continued dull. There was little demand among papermakers for rosin and prices on the grade of interest to them remained at the same level, 6.10 to 6.15 cents a pound.

SALTCAKE.—Standard saltcake moved along slowly during the week with no startling changes in either direction. The price stayed at $25 to $27 a ton where it is expected to remain.

SATIN WHITE—The demand for satin white has become no greater and no less during the past seven days. The price remains at from 1.50 to 2.00 cents a pound.

SODA ASH.—There was little heavy trading in soda ash during the week. Paper mills are still holding off on their buying and the call for spot goods was small. The price is generally at 2.20 cents a pound on the basis of 48 per cent.

STARCH.—Starch has not changed during the week. There has been only moderate trading on the open market, but it is reported that contract goods are moving with regularity. The price of papermakers' starch is firm at from 2.80 to 3.10 cents a pound.

SULPHATE OF ALUMINA.—The summer dulness has hit alumina along with the other grades of chemicals, but dealers say that it is moving with reasonable regularity. Iron free is still at 2.15 to 2.40 and commercial at 1.35 to 1.45.

Market Quotations

(*Continued from page 74*)

No. 1 Mixed	1.60	@	1.75
No. 2 Mixed	1.25	@	1.50
Solid Ledger Stock	2.50	@	2.75
Writing Paper	2.25	@	2.50
No. 1 Books, heavy	2.00	@	2.25
No. 2 Books, light	1.40	@	1.50
No. 1 New Manila	2.75	@	3.00
No. 1 Old Manila	1.50	@	1.75
Container Manila	1.35	@	1.50
Old Kraft	2.25	@	2.50
Overissue News	1.50	@	1.60
Old Newspaper	1.00	@	1.50
No. 1 Mixer Paper	1.00	@	1.10
Common Paper	.80	@	.90
Straw Board, Chip	1.00	@	1.10
Binders Bd., Chip	1.00	@	1.10

Domestic Rags—New.
Price to Mill, f. o. b. Phila.

Shirt Cuttings—			
New White, No. 1	.12	@	.12¼
New White, No. 2	.07	@	
Silicias, No. 1	.07¼	@	.07⅝
New unbleached	.10	@	.11
Washables	.04½	@	
Fancy	.05¾	@	.05⅞
Cottons—according to grades—			
Blue Overall	.05½	@	.05¾
New Blue	.02¼	@	.02½
New Black Soft	.06¼	@	.06½
New Light Seconds	.02¾	@	.02⅞
Khaki Cuttings	.11	@	.04½
Corduroy	.03½	@	.04
New Canvass	.08¼	@	.08¾
New Black Mixed	.04	@	
Old White, No. 1—			
Repacked	.06	@	.06¼
Miscellaneous	.04½	@	.04¾
White, No. 2—			
Repacked	.03½	@	.04
Miscellaneous	.03	@	.03¼
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.85	@	1.90
Black Stockings	2.75	@	3.00
Roofing Stock—			
No. 1	1.35	@	1.40
No. 2	1.25	@	1.30
No. 3	1.15	@	1.20
No. 4	1.15	@	1.20
No. 5A	1.10	@	
B			nominal
C			nominal

BOSTON

[FROM OUR REGULAR CORRESPONDENT.]

Paper

Bonds	.09½	@	.63
Ledgers	.09½	@	.55
Writings	.08½	@	.42
Superfine	.16	@	.26
Fine	.15	@	.18
Books, S. & S. C.	.07¼	@	.12
Books, M. F.	.06¼	@	.09½
Books, coated	.09	@	.15
Label	.09	@	.13
News, sheets	4.75	@	6.00
News, rolls	4.50	@	5.75
Manilas—			
No. 1 Manila	$6.00	@	7.00
No. 1 Fiber	.06½	@	.07
No. 1 Jute	9.00	@	10.50
Kraft Wrapping	.07	@	
Common Bogus	3.50	@	3.85

Boards

(Per Ton Destination)

Chip	$62.50	@	65.00
News, Vat Lined	65.00	@	70.00
Wood, Vat Lined	$72.50	@	75.00
Filled News Board	65.00	@	
Solid News Board	75.00	@	80.00
S. Manila Chip	75.00	@	80.00
Pat. Coated	90.00	@	105.00

Old Papers

Shavings—			
No. 1 Hard White	4.15	@	4.25
No. 1 Soft White	3.35	@	3.50
No. 1 Mixed	.90	@	1.00
Ledgers & Writing	2.15	@	2.25
Solid Books	2.00	@	2.25
Blanks	1.50	@	1.65
No. 2 Light Books	1.60	@	1.75
Folded News, overissues	$20.00	@	25.00
Gunny Bagging	1.25	@	1.35
Manila Rope	6.25	@	6.50
Common Paper	15.00	@	16.00
Old News	18.00	@	20.00
Old Kraft	1.90	@	2.10
No. 1 Scrap Burlap	.90	@	1.00
No. 2 Roofing Bagging	.60	@	.70
Mixed Strings, 1 cent per lb.			

TORONTO

[FROM OUR REGULAR CORRESPONDENT.]

Paper

(Mill Prices to Jobbers f. o. b. Mill)

Bond—			
Sulphite	.11	@	.12½
Light tinted	.12	@	.13½
Dark Tinted	.13½	@	.15
Ledgers (sulphite)	—	@	.13
Writing	.09½	@	.12
News, f. o. b. Mills—			
Rolls (carloads)	3.75	@	—
Sheets (carloads)	—	@	4.50
Sheets (2 tons or over)	—	@	4.75
Book—			
No. 1 M. F. (carloads)	9.00	@	—
No. 2 M. F. (carloads)	8.00	@	—
No. 3 M. F. (carloads)	7.50	@	—
No. 1 S. C. (carloads)	9.50	@	—
No. 2 S. C. (carloads)	8.50	@	—
No. 1 Coated and litho.	14.00	@	—
No. 2 Coated and litho	13.00	@	—
No. 3 Coated and litho.	12.25	@	—
Coated and litho., colored	14.25	@	—
Wrapping—			
Grey	5.00	@	—
White Wrap	5.75	@	—
"B" Manila	6.00	@	—
No. 1 Manila	7.25	@	—
Fiber	7.25	@	—
Kraft, M. F.	8.00	@	—
M. G.	8.15	@	—

Pulp

(F. o. b. Mill)

Ground wood	$35.00	@	40.00
Sulphite easy bleaching	65.00	@	75.00
Sulphite news grade	55.00	@	60.00
Sulphite, bleached	90.00	@	100.00
Sulphate	65.00	@	70.00

Old Waste Papers

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.90	@	—
Soft White Book shavings	3.40	@	—
White Blk. News	2.10	@	—
Book and Ledger—			
Flat Magazine and Book Stock(old)	1.80	@	—
Light and Crumpled Book Stock	1.65	@	—
Ledgers and Writings	2.00	@	—
Solid Ledgers	2.00	@	—
Manilas—			
New Manila Cut	2.10	@	—
Printed Manilas	1.85	@	—
Kraft	2.50	@	—
News and Scrap—			
Strictly Overissue	1.30	@	—
Folded News	1.30	@	—
No. 1 Mixed Papers	1.10	@	—

Domestic Rags—
Price to mills, f. o. b. Toronto
Per lb.

No. 1 White shirt cuttings	.13	@	.13½
No. 2 White shirt cuttings	.07	@	.07¼
Fancy shirt cuttings	.06½	@	.06¾
No. 1 Old whites	.04½	@	.05
Third and blues	.02¾	@	.03

Per cwt

Black stockings	.03	@	—
Roofing stock:			
No. 1	—	@	—
No. 2	—	@	—
Roofing stock:			
Manila rope	.06½	@	.06¾
No. 2	1.55	@	—
Gunny bagging	.01¾	@	—